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* * * * * * * * * * * * * Welcome to STN International * * * * * * * * * * * * * *

NEWS 1 Web Page URLs for STN Seminar Schedule - N. America
NEWS 2 Jan 25 BLAST(R) searching in REGISTRY available in STN on the Web
NEWS 3 Jan 29 FSTA has been reloaded and moves to weekly updates
NEWS 4 Feb 01 DKILIT now produced by FIZ Karlsruhe and has a new update frequency
NEWS 5 Feb 19 Access via Tymnet and SprintNet Eliminated Effective 3/31/02
NEWS 6 Mar 08 Gene Names now available in BIOSIS
NEWS 7 Mar 22 TOXLIT no longer available
NEWS 8 Mar 22 TRCTHERMO no longer available
NEWS 9 Mar 28 US Provisional Priorities searched with P in CA/CAplus and USPATFULL
NEWS 10 Mar 28 LIPINSKI/CALC added for property searching in REGISTRY
NEWS 11 Apr 02 PAPERCHEM no longer available on STN. Use PAPERCHEM2 instead.
NEWS 12 Apr 08 "Ask CAS" for self-help around the clock
NEWS 13 Apr 09 BEILSTEIN: Reload and Implementation of a New Subject Area
NEWS 14 Apr 09 ZDB will be removed from STN
NEWS 15 Apr 19 US Patent Applications available in IFICDB, IFIPAT, and IFIUDB
NEWS 16 Apr 22 Records from IP.com available in CAPLUS, HCAPLUS, and ZCAPLUS
NEWS 17 Apr 22 BIOSIS Gene Names now available in TOXCENTER
NEWS 18 Apr 22 Federal Research in Progress (FEDRIP) now available
NEWS 19 Jun 03 New e-mail delivery for search results now available
NEWS 20 Jun 10 MEDLINE Reload
NEWS 21 Jun 10 PCTFULL has been reloaded

NEWS EXPRESS February 1 CURRENT WINDOWS VERSION IS V6.0d,
CURRENT MACINTOSH VERSION IS V6.0a(ENG) AND V6.0Ja(JP),
AND CURRENT DISCOVER FILE IS DATED 05 FEBRUARY 2002

NEWS HOURS STN Operating Hours Plus Help Desk Availability
NEWS INTER General Internet Information
NEWS LOGIN Welcome Banner and News Items
NEWS PHONE Direct Dial and Telecommunication Network Access to STN
NEWS WWW CAS World Wide Web Site (general information)

Enter NEWS followed by the item number or name to see news on that specific topic.

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FILE 'HOME' ENTERED AT 22:18:32 ON 28 JUN 2002

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FULL ESTIMATED COST

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FILE 'REGISTRY' ENTERED AT 22:18:43 ON 28 JUN 2002
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STRUCTURE FILE UPDATES: 26 JUN 2002 HIGHEST RN 434281-39-7
DICTIONARY FILE UPDATES: 26 JUN 2002 HIGHEST RN 434281-39-7

TSCA INFORMATION NOW CURRENT THROUGH January 7, 2002

Please note that search-term pricing does apply when
conducting SmartSELECT searches.

Crossover limits have been increased. See HELP CROSSOVER for details.

Calculated physical property data is now available. See HELP PROPERTIES
for more information. See STNote 27, Searching Properties in the CAS
Registry File, for complete details:
<http://www.cas.org/ONLINE/STN/STNOTES/stnotes27.pdf>

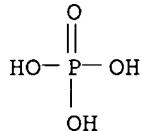
=> e phosphoric acid/cn
E1 1 PHOSPHORIBULOSE ISOMERASE/CN
E2 1 PHOSPHORIBULOSE PYROPHOSPHATE/CN
E3 1 --> PHOSPHORIC ACID/CN
E4 1 PHOSPHORIC ACID ((C12H25O)(ZNO2)PO), MONODODECYL ESTER, ZINC
SALT (1:1)/CN
E5 1 PHOSPHORIC ACID (3R)-5-(4-BROMOBENZYL)-7-(3,5-DICHLOROPHENYL
)-5-METHYL-6-OXO-6,7-DIHYDRO-5H-IMIDAZO(1,2-A)IMIDAZOL-3-YL
DIETHYL ESTER/CN
E6 1 PHOSPHORIC ACID (DIMETHYLAMIDE) DIMORPHOLIDE/CN
E7 1 PHOSPHORIC ACID (DODECYLAMIDE) BIS (DIMETHYLAMIDE) /CN
E8 1 PHOSPHORIC ACID (H10P8O25)/CN
E9 1 PHOSPHORIC ACID (H332PO4)/CN
E10 1 PHOSPHORIC ACID (H4P2O5)/CN
E11 1 PHOSPHORIC ACID (H6P6O18)/CN
E12 1 PHOSPHORIC ACID (Mn3(PO4)2.3H2O), NIOBIUM(5+) POTASSIUM ZIRC
ONIUM(4+) SALT (12:3:1:5)/CN

=> s e3
L1 1 "PHOSPHORIC ACID"/CN

=> d

L1 ANSWER 1 OF 1 REGISTRY COPYRIGHT 2002 ACS
RN 7664-38-2 REGISTRY
CN Phosphoric acid (7CI, 8CI, 9CI) (CA INDEX NAME)
OTHER NAMES:
CN 3M Etching Liquid
CN C 134
CN C 134 (acid)
CN C 434
CN C 434 (acid)
CN Decon 4512
CN EVITs
CN K-etchant
CN Kefo
CN Mikro Kleene DF

CN Orthophosphoric acid
 CN Sonac
 CN SPA 2
 CN SPA 2 (catalyst)
 CN TG 434
 CN Ultra-Etch Gel
 CN Uni-Etch
 CN WC-Reiniger
 FS 3D CONCORD
 DR 28602-75-7, 178560-73-1
 MF H3 O4 P
 CI COM
 LC STN Files: AGRICOLA, ANABSTR, BIOBUSINESS, BIOSIS, BIOTECHNO, CA, CABA,
 CANCERLIT, CAOLD, CAPLUS, CASREACT, CBNB, CEN, CHEMCATS, CHEMINFORMRX,
 CHEMLIST, CIN, CSCHEM, CSNB, DDFU, DETHERM*, DIOGENES, DIPPR*, DRUGU,
 EMBASE, ENCOMPLIT, ENCOMPLIT2, ENCOMPPAT, ENCOMPPAT2, GMELIN*, HSDB*,
 IFICDB, IFIPAT, IFIUDB, IPA, MEDLINE, MRCK*, MSDS-OHS, NAPRALERT,
 NIOSHTIC, PDLCOM*, PIRA, PROMT, RTECS*, SPECINFO, TOXCENTER, TULSA,
 ULIDAT, USAN, USPAT2, USPATFULL, VETU, VTB
 (*File contains numerically searchable property data)
 Other Sources: DSL**, EINECS**, TSCA**
 (**Enter CHEMLIST File for up-to-date regulatory information)



PROPERTY DATA AVAILABLE IN THE 'PROP' FORMAT

43934 REFERENCES IN FILE CA (1967 TO DATE)
 6697 REFERENCES TO NON-SPECIFIC DERIVATIVES IN FILE CA
 43970 REFERENCES IN FILE CAPLUS (1967 TO DATE)
 1 REFERENCES IN FILE CAOLD (PRIOR TO 1967)

=> e sulfuric

| | | |
|-----|-------|-----------------------|
| E1 | 2 | SULFURHEXAFLUORIDE/BI |
| E2 | 13 | SULFURIAN/BI |
| E3 | 17269 | --> SULFURIC/BI |
| E4 | 1 | SULFURICINAT/BI |
| E5 | 10 | SULFURICUM/BI |
| E6 | 7 | SULFURICUS/BI |
| E7 | 2 | SULFURID/BI |
| E8 | 1 | SULFURIDAZOLE/BI |
| E9 | 1 | SULFURIDE/BI |
| E10 | 32 | SULFURIG/BI |
| E11 | 20 | SULFURIGASTER/BI |
| E12 | 32 | SULFURIGENE/BI |

=> e sulfuric acid/cn

| | | |
|----|---|---|
| E1 | 1 | SULFURIAN NAUMANNITE/CN |
| E2 | 1 | SULFURIAN TELLURIAN CLAUSTHALITE/CN |
| E3 | 1 | --> SULFURIC ACID/CN |
| E4 | 1 | SULFURIC ACID ((C ₇ H ₇ O)(HO)SO ₂), MONO(M-TOLYL) ESTER/CN |
| E5 | 1 | SULFURIC ACID (D ₂ SO ₄)/CN |
| E6 | 1 | SULFURIC ACID (H ₂ 35SO ₄)/CN |
| E7 | 1 | SULFURIC ACID 1,2-DIAMINOETHANE SALT (2:1)/CN |
| E8 | 1 | SULFURIC ACID ALUMINUM DIMETHYLLAMMONIUM SALT (2:1:1) HEXAHYD |

RATE/CN

E9 1 SULFURIC ACID ALUMINUM SALT (AL₂(SO₄)₃)/CN
 E10 1 SULFURIC ACID ALUMINUM(3+) SALT (3:2)/CN
 E11 1 SULFURIC ACID AMMONIUM CHROMIUM SALT (2:1:1), DIHYDRATE/CN
 E12 1 SULFURIC ACID AMMONIUM CHROMIUM SALT (2:1:1), HEXAHYDRATE/CN

=> s e3

L2 1 "SULFURIC ACID"/CN

=> d

L2 ANSWER 1 OF 1 REGISTRY COPYRIGHT 2002 ACS

RN 7664-93-9 REGISTRY

CN **Sulfuric acid (8CI, 9CI)** (CA INDEX NAME)

OTHER NAMES:

CN BOV

CN Brimstone acid

CN Contact acid

CN Dihydrogen sulfate

CN Dipping acid

CN Oil of vitriol

CN Sulphuric acid

CN Vitriol brown oil

FS 3D CONCORD

DR 127529-01-5, 119540-51-1, 140623-70-7

MF H₂ O₄ S

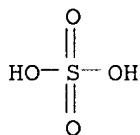
CI COM

LC STN Files: AGRICOLA, ANABSTR, BIOBUSINESS, BIOSIS, BIOTECHNO, CA, CABA, CANCERLIT, CAOLD, CAPLUS, CASREACT, CBNB, CEN, CHEMCATS, CHEMINFORMRX, CHEMLIST, CHEMSAFE, CIN, CSCHEM, CSNB, DDFU, DETHERM*, DIPPR*, DRUGU, EMBASE, ENCOMPLIT, ENCOMPLIT2, ENCOMPPAT, ENCOMPPAT2, GMELIN*, HSDB*, IFICDB, IFIPAT, IFIUDB, IPA, MEDLINE, MRCK*, MSDS-OHS, NIOSHTIC, PDLCOM*, PIRA, PROMT, RTECS*, SPECINFO, TOXCENTER, TULSA, ULIDAT, USAN, USPAT2, USPATFULL, VTB

(*File contains numerically searchable property data)

Other Sources: DSL**, EINECS**, TSCA**

(**Enter CHEMLIST File for up-to-date regulatory information)



PROPERTY DATA AVAILABLE IN THE 'PROP' FORMAT

68278 REFERENCES IN FILE CA (1967 TO DATE)

3779 REFERENCES TO NON-SPECIFIC DERIVATIVES IN FILE CA

68324 REFERENCES IN FILE CAPLUS (1967 TO DATE)

1 REFERENCES IN FILE CAOLD (PRIOR TO 1967)

=> e-boric acid/cn

L3 0 E-BORIC ACID/CN

=> e boric acid

E1 1 BORIBORATE/BI

E2 5671 BORIC/BI

E3 0 --> BORIC ACID/BI
E4 8 BORICCOCBALT/BI
E5 8 BORICCOCBALTIC/BI
E6 2 BORICCUPRIC/BI
E7 1 BORICFERRI/BI
E8 1 BORICFERRIC/BI
E9 2 BORICID/BI
E10 1 BORICIDE/BI
E11 2 BORICIN/BI
E12 1 BORICINE/BI

=> e boric acid/cn

E1 1 BORIAN SURINAMITE/CN
E2 1 BORIAN VESUVIANITE/CN
E3 2 --> BORIC ACID/CN
E4 1 BORIC ACID ((H₃BO₃)), BARIUM ZINC SALT (2:2:1)/CN
E5 1 BORIC ACID ((H₃BO₃)), CYCLIC 2-ISOPROPYL-2-(1-METHOXYETHYL)TRIMETHYLENE BUTYL ESTER/CN
E6 1 BORIC ACID ((H₃BO₃)), POLYMER WITH 1-BUTANOL TITANIUM(4+) SALT, DICHLORODIMETHYLSILANE AND DICHLORODIPHENYLSILANE/CN
E7 1 BORIC ACID ((H₄B₂O₅)), TETRAKIS(TRIETHYLSILYL) ESTER/CN
E8 1 BORIC ACID (B(OH)₃)/CN
E9 1 BORIC ACID (BO₂), CESIUM COMPLEX/CN
E10 1 BORIC ACID (D₂HBO₃)/CN
E11 1 BORIC ACID (D₃10BO₃)/CN
E12 1 BORIC ACID (D₃11BO₃)/CN

=> s e3

L4 2 "BORIC ACID"/CN

=> d

L4 ANSWER 1 OF 2 REGISTRY COPYRIGHT 2002 ACS
RN 11113-50-1 REGISTRY
CN **Boric acid (9CI)** (CA INDEX NAME)
PR 10043-35-3
MF Unspecified
CI COM, MAN
LC STN Files: BIOSIS, BIOTECHNO, CA, CAPLUS, CASREACT, CHEMLIST, EMBASE, IFICDB, IFIPAT, IFIUDB, MEDLINE, MSDS-OHS, NIOSHTIC, PDLCOM*, TOXCENTER, USPATFULL
(*File contains numerically searchable property data)
Other Sources: DSL**, EINECS**, TSCA**
(**Enter CHEMLIST File for up-to-date regulatory information)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

1505 REFERENCES IN FILE CA (1967 TO DATE)

162 REFERENCES TO NON-SPECIFIC DERIVATIVES IN FILE CA

1505 REFERENCES IN FILE CAPLUS (1967 TO DATE)

=> e carbonic acid/cn

E1 1 CARBONET/CN
E2 1 CARBONEX/CN
E3 1 --> CARBONIC ACID/CN
E4 1 CARBONIC ACID (4-NITROPHENYL) (2-DIBENZOFURANYL) ESTER/CN
E5 1 CARBONIC ACID (D₂CO₃)/CN
E6 1 CARBONIC ACID (H₂CO₃), MANGANESE SALT/CN
E7 1 CARBONIC ACID 1-(5-ACETYL-3-(4-CHLOROPHENYL)-4,5,6,7-TETRAHYDROPIPERAZOLO(4,3-C)PYRIDIN-1-YLMETHYL)-2-(4-O-TOLYLPIPERAZIN-1-YL)ETHYL ESTER METHYL ESTER/CN
E8 1 CARBONIC ACID 2-(5-ACETYL-3-(4-TRIFLUOROMETHYLPHENYL)-4,5,6,7-TETRAHYDROPIPERAZOLO(4,3-C)PYRIDIN-1-YL)-1-(4-O-TOLYLPIPERAZ

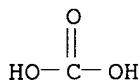
E9 1 IN-1-YLMETHYL) ETHYL METHYL ESTER/CN
 CARBONIC ACID 2-ETHOXCARBONYLOXY-3-NITRO-4- (3-PHENYLPROPION
 YL) PHENYL ESTER ETHYL ESTER/CN
 E10 1 CARBONIC ACID 2-ETHOXCARBONYLOXY-3-NITRO-4- (4-PHENYLBUTYRYL
) PHENYL ESTER ETHYL ESTER/CN
 E11 1 CARBONIC ACID 2-ETHOXCARBONYLOXY-3-NITRO-4-PHENYLACETYLPHEN
 YL ESTER ETHYL ESTER/CN
 E12 1 CARBONIC ACID 4,5-DIBENZOYL-2-ETHOXCARBONYLOXY-3-NITROPHENY
 L ESTER ETHYL ESTER/CN

=> s e3

L5 1 "CARBONIC ACID"/CN

=> d

L5 ANSWER 1 OF 1 REGISTRY COPYRIGHT 2002 ACS
 RN 463-79-6 REGISTRY
 CN **Carbonic acid (7CI, 8CI, 9CI)** (CA INDEX NAME)
 FS 3D CONCORD
 DR 97328-76-2
 MF C H2 O3
 CI COM
 LC STN Files: AGRICOLA, ANABSTR, BIOBUSINESS, BIOSIS, BIOTECHNO, CA,
 CANCERLIT, CAOLD, CAPLUS, CASREACT, CBNB, CEN, CHEMLIST, CIN, CSCHEM,
 DDFU, DETHERM*, DRUGU, EMBASE, GMELIN*, IFICDB, IFIPAT, IFIUDB, MEDLINE,
 MSDS-OHS, NIOSHTIC, PDLCOM*, PIRA, PROMT, TOXCENTER, TULSA, USPAT2,
 USPATFULL, VTB
 (*File contains numerically searchable property data)



PROPERTY DATA AVAILABLE IN THE 'PROP' FORMAT

3888 REFERENCES IN FILE CA (1967 TO DATE)
 2446 REFERENCES TO NON-SPECIFIC DERIVATIVES IN FILE CA
 3892 REFERENCES IN FILE CAPLUS (1967 TO DATE)
 3 REFERENCES IN FILE CAOLD (PRIOR TO 1967)

=> e perchloric acid/cn

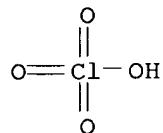
E1 1 PERCHLORATOTRIS (TRIPHENYLPHOSPHINE) COBALT/CN
 E2 1 PERCHLORETHYLENE/CN
 E3 1 --> PERCHLORIC ACID/CN
 E4 1 PERCHLORIC ACID (H3CLO4), BISMUTH SALT (3:1)/CN
 E5 1 PERCHLORIC ACID CALCIUM SALT (2:1)/CN
 E6 1 PERCHLORIC ACID COMPD. WITH ACPH/CN
 E7 1 PERCHLORIC ACID DIHYDRATE/CN
 E8 1 PERCHLORIC ACID GALLIUM(3+) SALT/CN
 E9 1 PERCHLORIC ACID HYDRATE/CN
 E10 1 PERCHLORIC ACID HYDRATE (HClO4.5H2O)/CN
 E11 1 PERCHLORIC ACID INDIUM SALT/CN
 E12 1 PERCHLORIC ACID LITHIUM SALT (1:1)/CN

=> s e3

L6 1 "PERCHLORIC ACID"/CN

=> d

L6 ANSWER 1 OF 1 REGISTRY COPYRIGHT 2002 ACS
 RN 7601-90-3 REGISTRY
 CN **Perchloric acid (8CI, 9CI)** (CA INDEX NAME)
 DR 101200-37-7, 102278-63-7, 95912-44-0, 95998-58-6, 106644-01-3,
 119630-46-5, 139339-89-2, 153389-31-2, 143171-41-9, 92785-38-1,
 90149-16-9, 47999-51-9, 111341-24-3, 200863-18-9
 MF Cl H O4
 CI COM
 LC STN Files: AGRICOLA, ANABSTR, BIOBUSINESS, BIOSIS, BIOTECHNO, CA,
 CANCERLIT, CAOLD, CAPLUS, CASREACT, CBNB, CEN, CHEMCATS, CHEMINFORMRX,
 CHEMLIST, CIN, CSCHEM, CSNB, DETHERM*, DIPPR*, EMBASE, ENCOMPLIT,
 ENCOMPLIT2, ENCOMPPAT, ENCOMPPAT2, GMELIN*, HSDB*, IFICDB, IFIPAT,
 IFIUDB, IPA, MEDLINE, MRCK*, MSDS-OHS, NIOSHTIC, PDLCOM*, PIRA, PROMT,
 RTECS*, TOXCENTER, TULSA, USPAT2, USPATFULL, VTB
 (*File contains numerically searchable property data)
 Other Sources: DSL**, EINECS**, TSCA**
 (**Enter CHEMLIST File for up-to-date regulatory information)



8929 REFERENCES IN FILE CA (1967 TO DATE)
 318 REFERENCES TO NON-SPECIFIC DERIVATIVES IN FILE CA
 8933 REFERENCES IN FILE CAPLUS (1967 TO DATE)
 1 REFERENCES IN FILE CAOLD (PRIOR TO 1967)

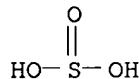
=> e sulfurous acid/cn
 E1 1 SULFUROL 8/CN
 E2 1 SULFUROSIS ACID, COBALT COMPLEX/CN
 E3 1 --> SULFUROUS ACID/CN
 E4 1 SULFUROUS ACID (H2SO3)/CN
 E5 1 SULFUROUS ACID ANHYDRIDE/CN
 E6 1 SULFUROUS ACID BIS(3-(3,5-DI-TERT-BUTYL-4-HYDROXYPHENYL)-2,2-
 -DIMETHYLPROPYL)ESTER/CN
 E7 1 SULFUROUS ACID COMPD. WITH HEXAMETHYLENETETRAMINE/CN
 E8 1 SULFUROUS ACID MONOETHYL ESTER, BARIUM SALT/CN
 E9 1 SULFUROUS ACID MONOETHYL ESTER, CALCIUM SALT/CN
 E10 1 SULFUROUS ACID MONOETHYL ESTER, LITHIUM SALT/CN
 E11 1 SULFUROUS ACID MONOETHYL ESTER, STRONTIUM SALT/CN
 E12 1 SULFUROUS ACID MONOMETHYL ESTER, BARIUM SALT/CN

=> s e3
 L7 1 "SULFUROUS ACID"/CN

=> d

L7 ANSWER 1 OF 1 REGISTRY COPYRIGHT 2002 ACS
 RN 7782-99-2 REGISTRY
 CN **Sulfurous acid (8CI, 9CI)** (CA INDEX NAME)
 OTHER NAMES:
 CN Sulfur dioxide solution
 CN Sulfurous acid (H2SO3)
 FS 3D CONCORD
 DR 125289-32-9, 63921-72-2, 65003-85-2, 21093-41-4, 104927-19-7, 66085-60-7,
 111910-53-3, 68720-49-0, 70074-94-1, 75481-08-2, 152463-65-5, 80879-60-3,
 110883-84-6
 MF H2 O3 S

CI COM
LC STN Files: AGRICOLA, ANABSTR, BIOBUSINESS, BIOSIS, BIOTECHNO, CA, CABA,
CAPLUS, CASREACT, CBNB, CEN, CHEMCATS, CHEMINFORMRX, CHEMLIST, CIN,
CSCHEM, CSNB, DETHERM*, EMBASE, GMELIN*, IFICDB, IFIPAT, IFIUDB, MRCK*,
MSDS-OHS, NIOSHTIC, PDLCOM*, PIRA, PROMT, RTECS*, TOXCENTER, TULSA,
USPAT2, USPATFULL, VTB
(*File contains numerically searchable property data)
Other Sources: DSL**, EINECS**, TSCA**
(**Enter CHEMLIST File for up-to-date regulatory information)



PROPERTY DATA AVAILABLE IN THE 'PROP' FORMAT

1747 REFERENCES IN FILE CA (1967 TO DATE)
255 REFERENCES TO NON-SPECIFIC DERIVATIVES IN FILE CA
1749 REFERENCES IN FILE CAPLUS (1967 TO DATE)

=> e ethylene glycol/cn

E1 1 ETHYLENE GERMANATE(IV)/CN
E2 1 ETHYLENE GLCYOL-MAGNESIUM BIS(2-HYDROXYETHYL PHTHALATE)-MALE
IC ANHYDRIDE-PHTHALIC ANHYDRIDE-PROPYLENE GLYCOL POLYMER/CN
E3 1 --> ETHYLENE GLYCOL/CN
E4 1 ETHYLENE GLYCOL (13C2H6O2)/CN
E5 1 ETHYLENE GLYCOL (2,4,5-TRICHLOROPHOXY)ACETATE/CN
E6 1 ETHYLENE GLYCOL (2-CHLORO-4-AMINOPHENYL) ETHER SULFURIC ACID
ESTER/CN
E7 1 ETHYLENE GLYCOL (3-CHLORO-4-AMINOPHENYL) ETHER SULFURIC ACID
ESTERS/CN
E8 1 ETHYLENE GLYCOL (3-METHYL-4-AMINOPHENYL) ETHER SULFURIC ACID
ESTER/CN
E9 1 ETHYLENE GLYCOL .ALPHA.,.ALPHA.-DIHYDROPERFLUOROBUTYL ETHER/
CN
E10 1 ETHYLENE GLYCOL .ALPHA.,.ALPHA.-DIHYDROPERFLUOROOCTYL ETHER/
CN
E11 1 ETHYLENE GLYCOL .ALPHA.-D-GLUCOPYRANOSIDE/CN
E12 1 ETHYLENE GLYCOL 1,1,7-TRIHYDROPERFLUOROHEPTYL ETHER/CN

=> s e3

L8 1 "ETHYLENE GLYCOL"/CN

=> d

L8 ANSWER 1 OF 1 REGISTRY COPYRIGHT 2002 ACS

RN 107-21-1 REGISTRY

CN 1,2-Ethanediol (9CI) (CA INDEX NAME)

OTHER CA INDEX NAMES:

CN Ethylene glycol (8CI)

CN Glycol (6CI, 7CI)

OTHER NAMES:

CN 1,2-Dihydroxyethane

CN 1,2-Ethylene glycol

CN 146AR

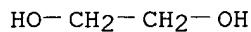
CN 2-Hydroxyethanol

CN Dowtherm SR 1

CN Ethylene alcohol

CN Ethylene dihydrate

CN Fridex
 CN Glycol alcohol
 CN Macrogol 400 BPC
 CN Monoethylene glycol
 CN Norkool
 CN Ramp
 CN Tescol
 CN Ucar 17
 CN Union Carbide XL 54 Type I De-icing Fluid
 CN Zerex
 FS 3D CONCORD
 DR 37221-95-7, 71767-64-1
 MF C2 H6 O2
 CI COM
 LC STN Files: ADISNEWS, AGRICOLA, ANABSTR, BEILSTEIN*, BIOBUSINESS, BIOSIS, BIOTECHNO, CA, CABA, CANCERLIT, CAOLD, CAPLUS, CASREACT, CBNB, CEN, CHEMCATS, CHEMINFORMRX, CHEMLIST, CHEMSAFE, CIN, CSCHEM, CSNB, DDFU, DETHERM*, DIOGENES, DIPPR*, DRUGU, EMBASE, ENCOMPLIT, ENCOMPLIT2, ENCOMPPAT, ENCOMPPAT2, HODOC*, HSDB*, IFICDB, IFIPAT, IFIUDB, IPA, MEDLINE, MRCK*, MSDS-OHS, NIOSHTIC, PDLCOM*, PIRA, PROMT, RTECS*, SPECINFO, SYNTHLINE, TOXCENTER, TULSA, ULIDAT, USPAT2, USPATFULL, VETU, VTB
 (*File contains numerically searchable property data)
 Other Sources: DSL**, EINECS**, TSCA**
 (**Enter CHEMLIST File for up-to-date regulatory information)



PROPERTY DATA AVAILABLE IN THE 'PROP' FORMAT

32767 REFERENCES IN FILE CA (1967 TO DATE)
 3316 REFERENCES TO NON-SPECIFIC DERIVATIVES IN FILE CA
 32816 REFERENCES IN FILE CAPLUS (1967 TO DATE)
 2 REFERENCES IN FILE CAOLD (PRIOR TO 1967)

=> e propylene glycol/cn

| | | |
|-----|---|---|
| E1 | 1 | PROPYLENE FUMARATE POLYMER/CN |
| E2 | 1 | PROPYLENE FUMARATE-PROPYLENE ISOPHTHALATE COPOLYMER/CN |
| E3 | 1 | --> PROPYLENE GLYCOL/CN |
| E4 | 1 | PROPYLENE GLYCOL (2-CHLORO-4-AMINOPHENYL) ETHER SULFURIC ACID ESTER/CN |
| E5 | 1 | PROPYLENE GLYCOL .BETA.-MONOETHYL ETHER/CN |
| E6 | 1 | PROPYLENE GLYCOL 1,2,3-PROPANETRIYL ETHER-TOLUENE DIISOCYANATE POLYMER/CN |
| E7 | 1 | PROPYLENE GLYCOL 1,2-DIPROPIONATE/CN |
| E8 | 1 | PROPYLENE GLYCOL 1,3-DITOSYLATE/CN |
| E9 | 1 | PROPYLENE GLYCOL 1-BEHENATE/CN |
| E10 | 1 | PROPYLENE GLYCOL 1-METHYL ETHER 2-ACETATE/CN |
| E11 | 1 | PROPYLENE GLYCOL 1-MONONITRATE/CN |
| E12 | 1 | PROPYLENE GLYCOL 1-MONOPROPIONATE/CN |

=> s e3

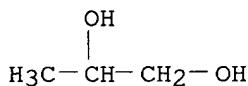
| | | |
|----|---|-----------------------|
| L9 | 1 | "PROPYLENE GLYCOL"/CN |
|----|---|-----------------------|

=> d

| | | | |
|----|-----------------|------------|--------------------|
| L9 | ANSWER 1 OF 1 | REGISTRY | COPYRIGHT 2002 ACS |
| RN | 57-55-6 | REGISTRY | |
| CN | 1,2-Propanediol | (8CI, 9CI) | (CA INDEX NAME) |

OTHER NAMES:

CN (.+-.)-1,2-Propanediol
CN (.+-.)-Propylene glycol
CN (RS)-1,2-Propanediol
CN .alpha.-Propylene glycol
CN 1,2-(RS)-Propanediol
CN 1,2-Dihydroxypropane
CN 1,2-Propylene glycol
CN 1000PG
CN 2,3-Propanediol
CN 2-Hydroxypropanol
CN DL-1,2-Propanediol
CN dl-Propylene glycol
CN Dowfrost
CN Isopropylene glycol
CN Methylene glycol
CN Methylethylene glycol
CN Monopropylene glycol
CN PG 12
CN Propylene glycol
CN Sirlene
CN Solar Winter Ban
CN Solargard P
CN Ucar 35
FS 3D CONCORD
DR 63625-56-9, 4254-16-4, 190913-75-8
MF C3 H8 O2
CI COM
LC STN Files: ADISNEWS, AGRICOLA, ANABSTR, BEILSTEIN*, BIOBUSINESS, BIOSIS, BIOTECHNO, CA, CABA, CANCERLIT, CAOLD, CAPLUS, CASREACT, CBNB, CEN, CHEMCATS, CHEMINFORMRX, CHEMLIST, CHEMSAFE, CIN, CSCHEM, CSNB, DDFU, DETHERM*, DIOGENES, DIPPR*, DRUGU, EMBASE, ENCOMPLIT, ENCOMPLIT2, ENCOMPPAT, ENCOMPPAT2, GMELIN*, HODOC*, HSDB*, IFICDB, IFIPAT, IFIUDB, IPA, MEDLINE, MRCK*, MSDS-OHS, NAPRALERT, NIOSHTIC, PDLCOM*, PHAR, PIRA, PROMT, RTECS*, SPECINFO, SYNTHLINE, TOXCENTER, TULSA, ULIDAT, USAN, USPAT2, USPATFULL, VETU, VTB
(*File contains numerically searchable property data)
Other Sources: DSL**, EINECS**, TSCA**
(**Enter CHEMLIST File for up-to-date regulatory information)



PROPERTY DATA AVAILABLE IN THE 'PROP' FORMAT

17366 REFERENCES IN FILE CA (1967 TO DATE)
2292 REFERENCES TO NON-SPECIFIC DERIVATIVES IN FILE CA
17396 REFERENCES IN FILE CAPLUS (1967 TO DATE)
19 REFERENCES IN FILE CAOLD (PRIOR TO 1967)

=> e butylene glycol/cn

E1 1 BUTYLENE DIACRYLATE-HYDROXYDECYL METHACRYLATE POLYMER/CN
E2 1 BUTYLENE DIMETHACRYLATE-METHYL ACRYLATE-VINYL ACETATE POLYMER
/CN
E3 3 --> BUTYLENE GLYCOL/CN
E4 1 BUTYLENE GLYCOL BIS(GLYCIDYL ETHER) POLYMER/CN
E5 1 BUTYLENE GLYCOL CHLOROFORMATE/CN
E6 1 BUTYLENE GLYCOL CITRACONATE-BUTYL METHACRYLATE-ETHYL METHACR

YLATE-VINYLTOLUENE POLYMER/CN
E7 1 BUTYLENE GLYCOL DEHYDROGENASE/CN
E8 1 BUTYLENE GLYCOL DEHYDROGENASE (NAD(P)H)/CN
E9 1 BUTYLENE GLYCOL DIACETATE/CN
E10 1 BUTYLENE GLYCOL DIACRYLATE-ETHYL ACRYLATE-METHYL METHACRYLATE COPOLYMER/CN
E11 1 BUTYLENE GLYCOL DIGLYCIDYL ETHER/CN
E12 1 BUTYLENE GLYCOL DIGLYCIDYL ETHER HOMOPOLYMER/CN

=> s e3

L10 3 "BUTYLENE GLYCOL"/CN

=> d

L10 ANSWER 1 OF 3 REGISTRY COPYRIGHT 2002 ACS

RN 25265-75-2 REGISTRY

CN Butanediol (8CI, 9CI) (CA INDEX NAME)

OTHER NAMES:

CN **Butylene glycol**

MF C4 H10 O2

CI IDS, COM

LC STN Files: AGRICOLA, ANABSTR, BIOBUSINESS, BIOSIS, BIOTECHNO, CA, CAPLUS, CEN, CHEMLIST, CIN, CSCHM, CSNB, EMBASE, IFICDB, IFIPAT, IFIUDB, NIOSHTIC, PDLCOM*, PIRA, PROMT, TOXCENTER, TULSA, USPAT2, USPATFULL, VTB

(*File contains numerically searchable property data)

H₃C—CH₂—CH₂—CH₃

2 (D1—OH)

1028 REFERENCES IN FILE CA (1967 TO DATE)

197 REFERENCES TO NON-SPECIFIC DERIVATIVES IN FILE CA

1031 REFERENCES IN FILE CAPLUS (1967 TO DATE)

=> e dipropylene glycol/cn

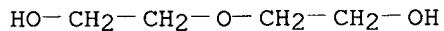
E1 1 DIPROPYLDOPAMINE/CN
E2 1 DIPROPYLENE CARBONATE/CN
E3 1 --> DIPROPYLENE GLYCOL/CN
E4 1 DIPROPYLENE GLYCOL .ALPHA.-METHYL-.BETA.,.BETA.-DICHLOORVINY
L PHOSPHATE POLYMER/CN
E5 1 DIPROPYLENE GLYCOL .ALPHA.-METHYL-.BETA.,.BETA.-DICHLOORVINY
L PHOSPHATE POLYMER, SRU/CN
E6 1 DIPROPYLENE GLYCOL .BETA.,.BETA.-DIBROMOVINYL PHOSPHATE POLY
MER/CN
E7 1 DIPROPYLENE GLYCOL .BETA.,.BETA.-DIBROMOVINYL PHOSPHATE POLY
MER, SRU/CN
E8 1 DIPROPYLENE GLYCOL 5,5,6,6,6-PENTAFLUOROHEXYL ETHER SODIUM S
ULFATE/CN
E9 1 DIPROPYLENE GLYCOL BENZOATE/CN
E10 1 DIPROPYLENE GLYCOL BIS((6-AMINOHEXYL)CARBAMATE)/CN
E11 1 DIPROPYLENE GLYCOL BIS(2-CHLOROPROPYL) PHOSPHITE/CN
E12 1 DIPROPYLENE GLYCOL BIS(2-PHENYL-2-HYDROXYETHYL) ETHER/CN

=> s e3

L11 1 "DIPROPYLENE GLYCOL"/CN

=> d

L11 ANSWER 1 OF 1 REGISTRY COPYRIGHT 2002 ACS
RN 25265-71-8 REGISTRY
CN Propanol, oxybis- (9CI) (CA INDEX NAME)
OTHER CA INDEX NAMES:
CN **Dipropylene glycol (6CI)**
DR 25322-23-0, 75047-14-2, 78644-49-2, 27941-90-8, 27941-91-9, 28678-26-4,
30370-61-7
MF C6 H14 O3
CI IDS, COM
LC STN Files: AGRICOLA, ANABSTR, BIOBUSINESS, BIOSIS, BIOTECHNO, CA, CAOLD,
CAPLUS, CASREACT, CBNB, CEN, CHEMCATS, CHEMLIST, CHEMSAFE, CIN, CSCHEM,
CSNB, DETHERM*, DIPPR*, EMBASE, HODOC*, HSDB*, IFICDB, IFIPAT, IFIUDB,
MSDS-OHS, PDLCOM*, PIRA, PROMT, RTECS*, TOXCENTER, TULSA, USPAT2,
USPATFULL, VTB
(*File contains numerically searchable property data)
Other Sources: DSL**, EINECS**, TSCA**
(**Enter CHEMLIST File for up-to-date regulatory information)



2 (D1--Me)

2269 REFERENCES IN FILE CA (1967 TO DATE)
341 REFERENCES TO NON-SPECIFIC DERIVATIVES IN FILE CA
2275 REFERENCES IN FILE CAPLUS (1967 TO DATE)
21 REFERENCES IN FILE CAOLD (PRIOR TO 1967)

=> e sorbitol/cn
E1 1 SORBITHOME TE/CN
E2 1 SORBITHOME TO/CN
E3 1 --> SORBITOL/CN
E4 1 SORBITOL .5 HYDRATE/CN
E5 1 SORBITOL 1,2,5,6-TETRADECANOATE/CN
E6 1 SORBITOL 1,5,6-TRIDECANOATE/CN
E7 1 SORBITOL 1,5-DISTEARATE/CN
E8 1 SORBITOL 1,6-DIDECANOATE/CN
E9 1 SORBITOL 1,6-DIDOCOSANOATE/CN
E10 1 SORBITOL 1,6-DIEICOSANOATE/CN
E11 1 SORBITOL 1,6-DIPALMITATE/CN
E12 1 SORBITOL 1,6-DISTEARATE/CN

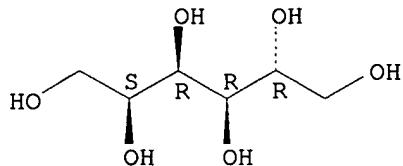
=> s e3
L12 1 SORBITOL/CN

=> d

L12 ANSWER 1 OF 1 REGISTRY COPYRIGHT 2002 ACS
RN 50-70-4 REGISTRY
CN D-Glucitol (9CI) (CA INDEX NAME)
OTHER CA INDEX NAMES:
CN Glucitol, D- (8CI)
CN **Sorbitol (7CI)**
OTHER NAMES:
CN (-)-Sorbitol
CN C*Sorbitidex
CN Cholaxine
CN D-(-)-Sorbitol

CN D-Sorbitol
CN D-Sorbol
CN Diakarmon
CN Esasorb
CN Foodol D 70
CN Glucarine
CN Glucarine (sorbitol syrup)
CN Glucitol
CN Karion
CN Karion (carbohydrate)
CN Karion instant
CN Kyowa Powder 50M
CN L-Gulitol
CN Multitol
CN Neosorb
CN Neosorb 20/60DC
CN Neosorb 70/02
CN Neosorb 70/70
CN Neosorb P 20/60
CN Neosorb P 60
CN Nivitin
CN Sionit
CN Sionit K
CN Sionite
CN Sionon
CN Siosan
CN Sorbex M
CN Sorbex R
CN Sorbex Rp
CN Sorbex S
CN Sorbex X
CN Sorbilande
CN Sorbit
CN Sorbit D 70
CN Sorbit Kyowa Powder 50M
CN Sorbit L 70
CN Sorbit S
CN Sorbit T 70
CN Sorbit W 70
CN Sorbit W-Powder
CN Sorbit WP
CN Sorbite
CN Sorbitol F
CN Sorbitol FP
ADDITIONAL NAMES NOT AVAILABLE IN THIS FORMAT - Use FCN, FIDE, or ALL for
DISPLAY
FS STEREOSEARCH
DR 8013-15-8, 8014-89-9, 8036-93-9, 8042-39-5, 8045-74-7, 8046-05-7,
63800-20-4, 15060-73-8, 98201-93-5, 3959-53-3, 36134-87-9, 75398-79-7
MF C6 H14 O6
CI COM
LC STN Files: ADISNEWS, AGRICOLA, ANABSTR, BEILSTEIN*, BIOBUSINESS, BIOSIS,
BIOTECHNO, CA, CABA, CANCERLIT, CAOLD, CAPLUS, CASREACT, CBNB, CEN,
CHEMCATS, CHEMINFORMRX, CHEMLIST, CHEMSAFE, CIN, CSCHEM, CSNB, DDFU,
DETERM*, DIOGENES, DIPPR*, DRUGU, EMBASE, ENCOMPLIT, ENCOMPLIT2,
ENCOMPPAT, ENCOMPPAT2, GMELIN*, HODOC*, HSDB*, IFICDB, IFIPAT, IFIUDB,
IPA, MEDLINE, MRCK*, MSDS-OHS, NAPRALERT, NIOSHTIC, PDLCOM*, PIRA,
PROMT, RTECS*, SPECINFO, TOXCENTER, TULSA, USAN, USPAT2, USPATFULL,
VETU, VTB
(*File contains numerically searchable property data)
Other Sources: DSL**, EINECS**, TSCA**
(**Enter CHEMLIST File for up-to-date regulatory information)

Absolute stereochemistry.



PROPERTY DATA AVAILABLE IN THE 'PROP' FORMAT

13676 REFERENCES IN FILE CA (1967 TO DATE)
1158 REFERENCES TO NON-SPECIFIC DERIVATIVES IN FILE CA
13691 REFERENCES IN FILE CPLUS (1967 TO DATE)
1 REFERENCES IN FILE CAOLD (PRIOR TO 1967)

=> e hexylene glycol

E1 1 HEXYLEICOSYL/BI
E2 1836 HEXYLENE/BI
E3 0 --> HEXYLENE GLYCOL/BI
E4 174 HEXYLENEBIS/BI
E5 2 HEXYLENEBISACET/BI
E6 2 HEXYLENEBISACETAMIDE/BI
E7 1 HEXYLENEBISAZO/BI
E8 1 HEXYLENEBISMETHAN/BI
E9 1 HEXYLENEBISMETHANOL/BI
E10 1 HEXYLENEBISMETHYL/BI
E11 1 HEXYLENEBISMETHYLENE/BI
E12 1 HEXYLENECARB/BI

=> e hexylene glycol/cn

E1 1 HEXYLDODECANOL/CN
E2 1 HEXYLDODECYLBENZENE/CN
E3 1 --> HEXYLENE GLYCOL/CN
E4 1 HEXYLENE GLYCOL DIACETATE/CN
E5 1 HEXYLENE GLYCOL DILAURATE/CN
E6 1 HEXYLENE GLYCOL DIOLEATE/CN
E7 1 HEXYLENE GLYCOL TITANATE/CN
E8 1 HEXYLENE SELENITE/CN
E9 1 HEXYLENEBIS(DODECYLDIMETHYLAMMONIUM BROMIDE)/CN
E10 1 HEXYLENEDIAMINE/CN
E11 1 HEXYLENEGLYCOL BORON ANHYDRIDE/CN
E12 1 HEXYLENIC ALDEHYDE/CN

=> s e3

L13 1 "HEXYLENE GLYCOL"/CN

=> d

L13 ANSWER 1 OF 1 REGISTRY COPYRIGHT 2002 ACS

RN 107-41-5 REGISTRY

CN 2,4-Pentanediol, 2-methyl- (8CI, 9CI) (CA INDEX NAME)

OTHER NAMES:

CN (.+-.)-2-Methyl-2,4-pentanediol

CN .alpha.,.alpha.,.alpha.'-Trimethyltrimethylene glycol

CN 1,1,3-Trimethyltrimethylenediol

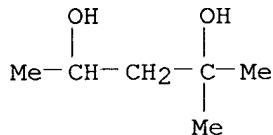
CN 2,4-Dihydroxy-2-methylpentane

CN 2-Methyl-2,4-pentanediol

CN Diolane

CN Hexylene glycol

CN Isol
 CN MPD
 FS 3D CONCORD
 DR 99113-75-4
 MF C6 H14 O2
 CI COM
 LC STN Files: AGRICOLA, ANABSTR, BEILSTEIN*, BIOBUSINESS, BIOSIS,
 BIOTECHNO, CA, CANCERLIT, CAOLD, CAPLUS, CASREACT, CBNB, CHEMCATS,
 CHEMINFORMRX, CHEMLIST, CHEMSAFE, CIN, CSCHEM, CSNB, DDFU, DETHERM*,
 DIPPR*, DRUGU, EMBASE, ENCOMPLIT, ENCOMPLIT2, ENCOMPPAT, ENCOMPPAT2,
 GMELIN*, HODOC*, HSDB*, IFICDB, IFIPAT, IFIUDB, IPA, MEDLINE, MRCK*,
 MSDS-OHS, NAPRALERT, NIOSHTIC, PDLCOM*, PIRA, PROMT, RTECS*, SPECINFO,
 TOXCENTER, TULSA, ULIDAT, USAN, USPAT2, USPATFULL
 (*File contains numerically searchable property data)
 Other Sources: DSL**, EINECS**, TSCA**
 (**Enter CHEMLIST File for up-to-date regulatory information)



PROPERTY DATA AVAILABLE IN THE 'PROP' FORMAT

1686 REFERENCES IN FILE CA (1967 TO DATE)
 50 REFERENCES TO NON-SPECIFIC DERIVATIVES IN FILE CA
 1689 REFERENCES IN FILE CAPLUS (1967 TO DATE)
 18 REFERENCES IN FILE CAOLD (PRIOR TO 1967)

=> e 1,3-dibutylene glycol/cn

| | | |
|-----|-------|---|
| E1 | 1 | 1,3-DIBUTYLBENZENE/CN |
| E2 | 1 | 1,3-DIBUTYLBUTABARBITAL/CN |
| E3 | 0 --> | 1,3-DIBUTYLENE GLYCOL/CN |
| E4 | 1 | 1,3-DIBUTYLGUANIDINE/CN |
| E5 | 1 | 1,3-DIBUTYLMIDAZOLIDINE/CN |
| E6 | 1 | 1,3-DIBUTYLMIDAZOLIDINE-4,5-DIONE-2-SENONE/CN |
| E7 | 1 | 1,3-DIBUTYLMIDAZOLIUM BROMIDE/CN |
| E8 | 1 | 1,3-DIBUTYLMIDAZOLIUM CHLORIDE/CN |
| E9 | 1 | 1,3-DIBUTYLMIDAZOLIUM TETRAFLUOROBORATE/CN |
| E10 | 1 | 1,3-DIBUTYLINDOLE/CN |
| E11 | 1 | 1,3-DIBUTYLISOCYANURIC ACID/CN |
| E12 | 1 | 1,3-DIBUTYNAPHTHALENE/CN |

=> e 1,2,6-hexanetriol/cn

| | | |
|----|-------|---|
| E1 | 1 | 1,2,6-HEXANETRICARBOXYLIC ACID, POLYMER WITH 1,4-BENZENEDICARBOXYLIC ACID, (E)-2-BUTENEDIOIC ACID, .ALPHA.,.ALPHA.'-((1-METHYLETHYLIDENE)DI-4,1-PHENYLENE)BIS(.OMEGA.-HYDROXYPOLY(OXY-1,2-ETHANEDIYL)) A/CN |
| E2 | 1 | 1,2,6-HEXANETRICARBOXYLIC ACID, TRIMETHYL ESTER/CN |
| E3 | 1 --> | 1,2,6-HEXANETRIOL/CN |
| E4 | 1 | 1,2,6-HEXANETRIOL DIGLUTARIC-MONOMALEIC ACID ESTER/CN |
| E5 | 1 | 1,2,6-HEXANETRIOL ETHER WITH POLYPROPYLENE GLYCOL, ESTER WITH THIOGLYCOLIC ACID/CN |
| E6 | 1 | 1,2,6-HEXANETRIOL POLYPROPYLENE GLYCOL TRIOL-CHLORENDIC ANHYDRIDE-(3,4-EPOXY-6-METHYLCYCLOHEXYL) METHYL 3,4-EPOXY-6-METHYLCYCLOHEXANE CARBOXYLATE POLYMER/CN |

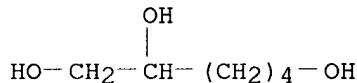
E7 1 1,2,6-HEXANETRIOL POLYPROPYLENE GLYCOL TRIOL-TETRACHLOROPHTHALIC ANHYDRIDE POLYMER/CN
 E8 1 1,2,6-HEXANETRIOL TRIACRYLATE/CN
 E9 1 1,2,6-HEXANETRIOL TRIGLUTARIC ACID ESTER/CN
 E10 1 1,2,6-HEXANETRIOL TRIS((3-(3-(3-(3-GLYCIDYL-5,5-DIMETHYLHYDANTOIN-1-CARBOXAMIDO)PROPYL)-5,5-DIMETHYL-2,4-DIOXO-1-IMIDAZOLIDINYL)PROPYL)CARBAMATE)/CN
 E11 1 1,2,6-HEXANETRIOL TRIS(THIOGLYCOLATE)/CN
 E12 1 1,2,6-HEXANETRIOL TRITHIOGLYCOLATE/CN

=> s e3

L14 1 "1,2,6-HEXANETRIOL"/CN

=> d

L14 ANSWER 1 OF 1 REGISTRY COPYRIGHT 2002 ACS
 RN 106-69-4 REGISTRY
 CN 1,2,6-Hexanetriol (8CI, 9CI) (CA INDEX NAME)
 OTHER NAMES:
 CN (.+-.)-1,2,6-Hexanetriol
 CN 1,2,6-Trihydroxyhexane
 FS 3D CONCORD
 DR 112254-74-7
 MF C6 H14 O3
 CI COM
 LC STN Files: BEILSTEIN*, BIOBUSINESS, BIOSIS, CA, CAOLD, CAPLUS, CASREACT, CHEMCATS, CHEMINFORMRX, CHEMLIST, CSCHEM, DETHERM*, HODOC*, IFICDB, IFIPAT, IFIUDB, MSDS-OHS, NIOSHTIC, RTECS*, SPECINFO, TOXCENTER, USPAT2, USPATFULL
 (*File contains numerically searchable property data)
 Other Sources: EINECS**, NDSL**, TSCA**
 (**Enter CHEMLIST File for up-to-date regulatory information)



PROPERTY DATA AVAILABLE IN THE 'PROP' FORMAT

417 REFERENCES IN FILE CA (1967 TO DATE)
 45 REFERENCES TO NON-SPECIFIC DERIVATIVES IN FILE CA
 418 REFERENCES IN FILE CAPLUS (1967 TO DATE)
 49 REFERENCES IN FILE CAOLD (PRIOR TO 1967)

=> e 1,5-pentanediol/cn

E1 1 1,5-PENTANEDINITRILE/CN
 E2 1 1,5-PENTANEDIOIC ACID/CN
 E3 1 --> 1,5-PENTANEDIOL/CN
 E4 1 1,5-PENTANEDIOL BIS(.BETA.-AMINOCROTONATE)/CN
 E5 1 1,5-PENTANEDIOL BIS(2-DIETHYLCARBAMOYLETHYL) ETHER/CN
 E6 1 1,5-PENTANEDIOL BIS(2-NAPHTHOATE)/CN
 E7 1 1,5-PENTANEDIOL BIS(4-HYDROXYBENZOATE)/CN
 E8 1 1,5-PENTANEDIOL BIS(METHOXYACETATE)/CN
 E9 1 1,5-PENTANEDIOL BIS(P-METHOXYCINNAMATE)/CN
 E10 1 1,5-PENTANEDIOL BIS(PHOXYACETATE)/CN
 E11 1 1,5-PENTANEDIOL CARBONATE/CN
 E12 1 1,5-PENTANEDIOL COMPOUND WITH CALCIUM CHLORIDE (2:1) MONOHYDRATE/CN

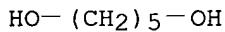
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=> s e3
L15      1 "1,5-PENTANEDIOL"/CN

=> d

L15  ANSWER 1 OF 1  REGISTRY  COPYRIGHT 2002 ACS
RN  111-29-5  REGISTRY
CN  1,5-Pentanediol (8CI, 9CI)  (CA INDEX NAME)
OTHER NAMES:
CN  .alpha.,.omega.-Pentanediol
CN  .omega.-Pentanediol
CN  1,5-Dihydroxypentane
CN  1,5-Pentamethylene glycol
CN  Pentamethylene glycol
CN  Pentylene glycol
FS  3D CONCORD
MF  C5 H12 O2
CI  COM
LC  STN Files:  AGRICOLA, BEILSTEIN*, BIOBUSINESS, BIOSIS, CA, CANCERLIT,
     CAOLD, CAPLUS, CASREACT, CHEMCATS, CHEMINFORMRX, CHEMLIST, CHEMSAFE,
     CIN, CSCHEM, DETHERM*, DIPPR*, GMELIN*, HODOC*, IFICDB, IFIPAT, IFIUDB,
     MEDLINE, MRCK*, MSDS-OHS, NIOSHTIC, PIRA, PROMT, RTECS*, SPECINFO,
     SYNTHLINE, TOXCENTER, TULSA, USPAT2, USPATFULL, VTB
     (*File contains numerically searchable property data)
Other Sources:  DSL**, EINECS**, TSCA**
     (**Enter CHEMLIST File for up-to-date regulatory information)

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PROPERTY DATA AVAILABLE IN THE 'PROP' FORMAT

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1538 REFERENCES IN FILE CA (1967 TO DATE)
87 REFERENCES TO NON-SPECIFIC DERIVATIVES IN FILE CA
1541 REFERENCES IN FILE CAPLUS (1967 TO DATE)
56 REFERENCES IN FILE CAOLD (PRIOR TO 1967)

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=> e ethanol/cn
E1      1      ETHANOIC ACID MONOMER/CN
E2      1      ETHANOIC ANHYDRIDE/CN
E3      1      --> ETHANOL/CN
E4      1      ETHANOL (((ME)2N(CH2CH2O))4SI), 2-(DIMETHYLAMINO)-, SILICATE
     /CN
E5      1      ETHANOL (1,2-DICHLORO-1,2,2-TRIFLUORO-), SULFUR COMPLEX/CN
E6      1      ETHANOL (BROMOACETYL)CARBAZATE/CN
E7      1      ETHANOL (C2H5OD)/CN
E8      1      ETHANOL (COMPD. WITH H2PTCL4 (2:1)), 2-AMINO-/CN
E9      1      ETHANOL 2,2'-(1-METHYL-5-NITRO-2-BENZIMIDAZOLYL)METHYLI MINO
     )DI-, HYDROCHLORIDE/CN
E10     1      ETHANOL ACYLTRANSFERASE/CN
E11     1      ETHANOL AMINE-MALEIC ANHYDRIDE-STYRENE-TRIETHYLENETETRAMINE
     POLYMER/CN
E12     1      ETHANOL ANION RADICAL/CN

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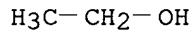
=> s e3
L16      1 ETHANOL/CN

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=> d

L16 ANSWER 1 OF 1 REGISTRY COPYRIGHT 2002 ACS

RN 64-17-5 REGISTRY
CN Ethanol (9CI) (CA INDEX NAME)
OTHER CA INDEX NAMES:
CN Ethyl alcohol (6CI, 7CI, 8CI)
OTHER NAMES:
CN 100C.NPA
CN Alcare Hand Degermer
CN Alcohol
CN Alcohol anhydrous
CN Algrain
CN Anhydrol
CN Anhydrol PM 4085
CN Desinfektol EL
CN Duplicating Fluid 100C.NPA
CN Esumiru WK 88
CN Ethicap
CN Ethyl hydrate
CN Ethyl hydroxide
CN Hinetoless
CN IMS 99
CN Jaysol
CN Jaysol S
CN Methylcarbinol
CN Molasses alcohol
CN Potato alcohol
CN SDA 3A
CN SDA 40-2
CN SY Fresh M
CN Synasol
CN Tecsol
CN Tecsol C
FS 3D CONCORD
DR 8000-16-6, 8024-45-1, 121182-78-3
MF C2 H6 O
CI COM
LC STN Files: ADISNEWS, AGRICOLA, ANABSTR, BEILSTEIN*, BIOBUSINESS, BIOSIS, BIOTECHNO, CA, CABAB, CANCERLIT, CAOLD, CAPLUS, CASREACT, CBNB, CEN, CHEMCATS, CHEMINFORMRX, CHEMLIST, CHEMSAFE, CIN, CSCHM, CSNB, DDFU, DETHERM*, DIOGENES, DIPPR*, DRUGU, EMBASE, ENCOMPLIT, ENCOMPLIT2, ENCOMPPAT, ENCOMPPAT2, GMELIN*, HODOC*, HSDB*, IFICDB, IFIPAT, IFIUDB, IPA, MEDLINE, MRCK*, MSDS-OHS, NAPRALERT, NIOSHTIC, PDLCOM*, PHARMASEARCH, PIRA, PROMT, RTECS*, SPECINFO, TOXCENTER, TULSA, ULIDAT, USAN, USPAT2, USPATFULL, VETU, VTB
(*File contains numerically searchable property data)
Other Sources: DSL**, EINECS**, TSCA**
(**Enter CHEMLIST File for up-to-date regulatory information)



PROPERTY DATA AVAILABLE IN THE 'PROP' FORMAT

132110 REFERENCES IN FILE CA (1967 TO DATE)
1070 REFERENCES TO NON-SPECIFIC DERIVATIVES IN FILE CA
132118 REFERENCES IN FILE CAPLUS (1967 TO DATE)
11 REFERENCES IN FILE CAOLD (PRIOR TO 1967)

=> e propanol/cn
E1 1 PROPANOIC-D5 ACID-D/CN
E2 1 PROPANOIC-T5 ACID/CN

E3 2 --> PROPANOL/CN
E4 1 PROPANOL 14/CN
E5 1 PROPANOL 15/CN
E6 1 PROPANOL 18/CN
E7 1 PROPANOL 21/CN
E8 1 PROPANOL DEHYDROGENASE/CN
E9 1 PROPANOL DEHYDROGENASE (SALMONELLA ENTERICA TYPHI STRAIN CT1
8 GENE PDUQ)/CN
E10 1 PROPANOL DEHYDROGENASE PDUQ (SALMONELLA TYPHIMURIUM STRAIN L
T2 GENE PDUQ)/CN
E11 1 PROPANOL NITRITE/CN
E12 1 PROPANOL PLUS/CN

=> s e3
L17 2 PROPANOL/CN

=> d

L17 ANSWER 1 OF 2 REGISTRY COPYRIGHT 2002 ACS
RN 62309-51-7 REGISTRY
CN **Propanol (9CI)** (CA INDEX NAME)
MF C3 H8 O
CI IDS, COM
LC STN Files: AGRICOLA, BIOCLOUD, BIOSIS, BIOTECHNO, CA, CAPLUS,
CASREACT, CEN, CIN, EMBASE, PIRA, PROMT, TOXCENTER, USPAT2, USPATFULL

H₃C—CH₂—CH₃

D1—OH

893 REFERENCES IN FILE CA (1967 TO DATE)
17 REFERENCES TO NON-SPECIFIC DERIVATIVES IN FILE CA
897 REFERENCES IN FILE CAPLUS (1967 TO DATE)

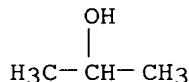
=> e isopropanol/cn
E1 1 ISOPROPANETELLURENYL PHENYL SELENIDE/CN
E2 1 ISOPROPANETHIOL/CN
E3 1 --> ISOPROPANOL/CN
E4 1 ISOPROPANOL ALUMINUM SALT/CN
E5 1 ISOPROPANOL COMPD. WITH IODIDE (1:1)/CN
E6 1 ISOPROPANOL DEHYDROGENASE/CN
E7 1 ISOPROPANOL DEHYDROGENASE (NAD)/CN
E8 1 ISOPROPANOL DEHYDROGENASE (NADP+)/CN
E9 1 ISOPROPANOL DEHYDROGENASE (NICOTINAMIDE ADENINE DINUCLEOTIDE
PHOSPHATE)/CN
E10 1 ISOPROPANOL FLUOROSULFATE/CN
E11 1 ISOPROPANOL HOMOPOLYMER/CN
E12 1 ISOPROPANOL ION(1-)/CN

=> s e3
L18 1 ISOPROPANOL/CN

=> d

L18 ANSWER 1 OF 1 REGISTRY COPYRIGHT 2002 ACS
RN 67-63-0 REGISTRY
CN 2-Propanol (9CI) (CA INDEX NAME)
OTHER CA INDEX NAMES:

CN Isopropyl alcohol (8CI)
 OTHER NAMES:
 CN 1-Methylethanol
 CN 1-Methylethyl alcohol
 CN 2-Hydroxypropane
 CN 2-Propyl alcohol
 CN Alcojel
 CN Alcosolve 2
 CN Autosept
 CN Avantin
 CN Avantine
 CN Combi-Schutz
 CN Dimethylcarbinol
 CN Hartosol
 CN Imsol A
 CN IPA
 CN IPS 1
 CN IPS 1 (alcohol)
 CN iso-Propanol
 CN iso-Propyl alcohol
 CN Isohol
 CN **Isopropanol**
 CN Lutosol
 CN n-Propan-2-ol
 CN Petrohol
 CN PRO
 CN Propol
 CN sec-Propanol
 CN sec-Propyl alcohol
 CN Sterisol Hand Disinfectant
 CN Takineocol
 CN Virahol
 FS 3D CONCORD
 DR 8013-70-5
 MF C3 H8 O
 CI COM
 LC STN Files: ADISNEWS, AGRICOLA, ANABSTR, BEILSTEIN*, BIOBUSINESS, BIOSIS,
 BIOTECHNO, CA, CABA, CANCERLIT, CAOLD, CAPLUS, CASREACT, CBNB, CEN,
 CHEMCATS, CHEMINFORMRX, CHEMLIST, CHEMSAFE, CIN, CSCHM, CSNB, DDFU,
 DETHERM*, DIOGENES, DIPPR*, DRUGU, EMBASE, ENCOMPLIT, ENCOMPLIT2,
 ENCOMPPAT, ENCOMPPAT2, GMELIN*, HODOC*, HSDB*, IFICDB, IFIPAT, IFIUDB,
 IPA, MEDLINE, MRCK*, MSDS-OHS, NAPRALERT, NIOSHTIC, PDLCOM*, PIRA,
 PROMT, RTECS*, SPECINFO, SYNTHLINE, TOXCENTER, TULSA, ULIDAT, USAN,
 USPAT2, USPATFULL, VETU, VTB
 (*File contains numerically searchable property data)
 Other Sources: DSL**, EINECS**, TSCA**
 (**Enter CHEMLIST File for up-to-date regulatory information)



PROPERTY DATA AVAILABLE IN THE 'PROP' FORMAT

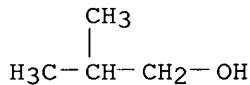
37083 REFERENCES IN FILE CA (1967 TO DATE)
 578 REFERENCES TO NON-SPECIFIC DERIVATIVES IN FILE CA
 37132 REFERENCES IN FILE CAPLUS (1967 TO DATE)
 8 REFERENCES IN FILE CAOLD (PRIOR TO 1967)

```
=> e isobutanol/cn
E1      1    ISOBUTANOIC ACID HYDRAZIDE/CN
E2      1    ISOBUTANOIC ANHYDRIDE/CN
E3      1 --> ISOBUTANOL/CN
E4      1    ISOBUTANOL SODIUM SALT/CN
E5      1    ISOBUTANOL VINYL ETHER/CN
E6      1    ISOBUTANOL-2-AMINE/CN
E7      1    ISOBUTANOL-ETHYLCYCLOHEXANE MIXT./CN
E8      1    ISOBUTANOYL CHLORIDE/CN
E9      1    ISOBUTANOYLFERROCENE/CN
E10     1    ISOBUTAVAN/CN
E11     1    ISOBUTEN-1-ONE/CN
E12     1    ISOBUTENAL/CN
```

```
=> s e3
L19      1 ISOBUTANOL/CN
```

```
=> d
```

```
L19  ANSWER 1 OF 1  REGISTRY  COPYRIGHT 2002 ACS
RN  78-83-1  REGISTRY
CN  1-Propanol, 2-methyl- (9CI)  (CA INDEX NAME)
OTHER CA INDEX NAMES:
CN  Isobutyl alcohol (8CI)
OTHER NAMES:
CN  1-Isobutanol
CN  2-Methyl-1-propanol
CN  2-Methylpropyl alcohol
CN  iso-Butyl alcohol
CN  Isobutanol
CN  Isopropyl carbinol
FS  3D CONCORD
MF  C4 H10 O
CI  COM
LC  STN Files:  AGRICOLA, ANABSTR, BEILSTEIN*, BIOBUSINESS, BIOSIS,
     BIOTECHNO, CA, CAOLD, CAPLUS, CASREACT, CBNB, CEN, CHEMCATS,
     CHEMINFORMRX, CHEMLIST, CHEMSAFE, CIN, CSCHEM, CSNB, DDFU, DETHERM*,
     DIPPR*, DRUGU, EMBASE, ENCOMPLIT, ENCOMPLIT2, ENCOMPPAT, ENCOMPPAT2,
     GMELIN*, HODOC*, HSDB*, IFICDB, IFIPAT, IFIUDB, IPA, MEDLINE, MRCK*,
     MSDS-OHS, NAPRALERT, NIOSHTIC, PDLCOM*, PIRA, PROMT, RTECS*, SPECINFO,
     SYNTHLINE, TOXCENTER, TULSA, UOLIDAT, USPAT2, USPATFULL, VTB
     (*File contains numerically searchable property data)
Other Sources:  DSL**, EINECS**, TSCA**
     (**Enter CHEMLIST File for up-to-date regulatory information)
```



```
**PROPERTY DATA AVAILABLE IN THE 'PROP' FORMAT**
```

```
10124 REFERENCES IN FILE CA (1967 TO DATE)
152 REFERENCES TO NON-SPECIFIC DERIVATIVES IN FILE CA
10139 REFERENCES IN FILE CAPLUS (1967 TO DATE)
6 REFERENCES IN FILE CAOLD (PRIOR TO 1967)
```

```
=> e butanol/cn
E1      1    BUTANOIC-D7 ACID, SODIUM SALT/CN
E2      1    BUTANOIC-D7 ACID-D/CN
```

| | | | |
|-----|---|-----|--|
| E3 | 2 | --> | BUTANOL/CN |
| E4 | 1 | | BUTANOL DEHYDROGENASE/CN |
| E5 | 1 | | BUTANOL LIGNIN/CN |
| E6 | 1 | | BUTANOL POTASSIUM SALT/CN |
| E7 | 1 | | BUTANOL, ((1-ETHYL-1,2-ETHANEDIYL) BIS(OXY)) BIS-/CN |
| E8 | 1 | | BUTANOL, ((1-METHYL-1,2-ETHANEDIYL) BIS(OXY)) BIS-/CN |
| E9 | 1 | | BUTANOL, ((1-METHYL-1,2-ETHANEDIYL) DINITRILIO) TETRAKIS-/CN |
| E10 | 1 | | BUTANOL, ((2-AMINOETHYL)AMINO)-/CN |
| E11 | 1 | | BUTANOL, ((3A,4,5,6,7,7A-HEXAHYDRO-4,7-METHANO-1H-INDEN-5(OR
6)-YL)OXY)-/CN |
| E12 | 1 | | BUTANOL, ((4-AMINO-6-METHOXY-1,3,5-TRIAZIN-2-YL)AMINO)-/CN |

=> s e3

L20 2 BUTANOL/CN

=> d

L20 ANSWER 1 OF 2 REGISTRY COPYRIGHT 2002 ACS
RN 35296-72-1 REGISTRY
CN **Butanol (9CI)** (CA INDEX NAME)
MF C4 H10 O
CI IDS, COM
LC STN Files: AGRICOLA, BIOBUSINESS, BIOSIS,
CASREACT, CEN, CIN, EMBASE, IFICDB, IFIPA
TOXCENTER, USPAT2, USPATFULL

$$\text{H}_3\text{C}-\text{CH}_2-\text{CH}_2-\text{CH}_3$$

D1—OH

1284 REFERENCES IN FILE CA (1967 TO DATE)
53 REFERENCES TO NON-SPECIFIC DERIVATIVES IN FILE CA
1287 REFERENCES IN FILE CAPLUS (1967 TO DATE)

=> file caplus

COST IN U.S. DOLLARS

| SINCE FILE
ENTRY | TOTAL
SESSION |
|---------------------|------------------|
| 125.60 | 125.81 |

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FILE COVERS 1907 - 28 Jun 2002 VOL 137 ISS 1
FILE LAST UPDATED: 27 Jun 2002 (20020627/ED)

This file contains CAS Registry Numbers for easy and accurate substance identification.

CAS roles have been modified effective December 16, 2001. Please check your SDI profiles to see if they need to be revised. For information on CAS roles, enter HELP ROLES at an arrow prompt or use the CAS Roles thesaurus (/RL field) in this file.

```
=> s etch? and l1 and l2 and l3 and l4 and l5 and l6 and l7
    163411 ETCH?
    43969 L1
    68322 L2
    0 L3
    19168 L4
    3893 L5
    8933 L6
    1752 L7
L21      0 ETCH? AND L1 AND L2 AND L3 AND L4 AND L5 AND L6 AND L7

=> s etch? or l1 or l2 or l3 or l4 or l5 or l6 or l7
    163411 ETCH?
    43969 L1
    68322 L2
    0 L3
    19168 L4
    3893 L5
    8933 L6
    1752 L7
L22      289966 ETCH? OR L1 OR L2 OR L3 OR L4 OR L5 OR L6 OR L7

=> s ETCH? and (L1 OR L2 OR L3 OR L4 OR L5 OR L6 OR L7)
    163411 ETCH?
    43969 L1
    68322 L2
    0 L3
    19168 L4
    3893 L5
    8933 L6
    1752 L7
L23      5622 ETCH? AND (L1 OR L2 OR L3 OR L4 OR L5 OR L6 OR L7)

=> s l23 and (l8 or l9 or l10 or l11 or l12 or l13 or l14 or l15)
    32823 L8
    17492 L9
    10202 L10
    2282 L11
    13715 L12
    1694 L13
    427 L14
    1541 L15
L24      82 L23 AND (L8 OR L9 OR L10 OR L11 OR L12 OR L13 OR L14 OR L15)

=> s l23 and (l16 or l17 or l18 or l19 or l20)
    132262 L16
    24518 L17
    37145 L18
    10147 L19
    32133 L20
L25      160 L23 AND (L16 OR L17 OR L18 OR L19 OR L20)

=> s l24 and (semiconductor)
    372309 SEMICONDUCTOR
L26      18 L24 AND (SEMICONDUCTOR)
```

=> s 125 and semiconductor
372309 SEMICONDUCTOR
L27 38 L25 AND SEMICONDUCTOR

=> d 126,1-18,all

*Waste
parts*

L26 ANSWER 1 OF 18 CAPLUS COPYRIGHT 2002 ACS
AN 2002:217417 CAPLUS
DN 137:9993
TI Estimation of VOCs emission factor for **semiconductor** manufacturing processes
AU Chein, H.; Chen, M.-H.
CS Center for Environmental, Safety and Health Technology, Industrial Technology Research Institute, Taiwan
SO Advances in Air Pollution (2001), 10(Air Pollution IX), 491-500
CODEN: AAPOFM; ISSN: 1369-5886
PB WIT Press
DT Journal
LA English
CC 59-2 (Air Pollution and Industrial Hygiene)
Section cross-reference(s): 74, 76
AB The **semiconductor** manufg. industry contributed significantly to economic growth and became the most important industry in Taiwan; however, emission of hazardous air pollutants (HAP) produced by this industry is increasingly deteriorating ambient air quality. A great amt. of volatile org. compds. (VOC) can be produced and emitted with waste gases from **semiconductor** manufg. processes, e.g., cleaning, **etching**, and photolithog. This study estd. total VOC emissions from the **semiconductor** industry based on established emission factors, defined as the emission rate (kg/mo) divided by the amt. of chems. used (L/mo). The VOC emission rate was measured with a continuous emission monitor (CEM). The amt. of chems. used was adopted from data reported to the Department of Environmental Protection by **semiconductor** factories in accordance with regulations. A total of 9 typical **semiconductor** facilities were analyzed in a 6-mo period. Preliminary results showed the VOC emission factor was 0.0481 .+- .0.0179 kg/L. A linear regression function was proposed to fit the data; results are presented and discussed.
ST estg volatile org emission **semiconductor** manufg waste gas Taiwan; air pollution volatile org emission **semiconductor** manufg Taiwan
IT Standards, legal and permissive (air quality; estg. volatile org. hazardous pollutant emission factors for air pollution by waste gas from **semiconductor** manufg. processes in Taiwan)
IT Air pollution
Electrophotographic developers
semiconductor materials (estg. volatile org. hazardous pollutant emission factors for air pollution by waste gas from **semiconductor** manufg. processes in Taiwan)
IT Volatile organic compounds
RL: OCU (Occurrence, unclassified); POL (Pollutant); OCCU (Occurrence) (estg. volatile org. hazardous pollutant emission factors for air pollution by waste gas from **semiconductor** manufg. processes in Taiwan)
IT Waste gases (**semiconductor** manufg.; estg. volatile org. hazardous pollutant emission factors for air pollution by waste gas from **semiconductor** manufg. processes in Taiwan)
IT Photolithography (solns. for; volatile org. compds. in; estg. volatile org. hazardous

pollutant emission factors for air pollution by waste gas from
semiconductor manufg. processes in Taiwan)

IT 67-63-0, Isopropyl alcohol, occurrence 67-64-1, Acetone, occurrence
107-21-1, 1,2-Ethanediol, occurrence 540-59-0, Ethene,
1,2-dichloro- 872-50-4, N-Methyl-2-pyrrolidinone, occurrence
1330-20-7, Xylene, occurrence 7647-01-0, Hydrochloric acid, occurrence
7664-39-3, Hydrofluoric acid, occurrence 7664-41-7, Ammonia, occurrence
7664-93-9, Sulfuric acid, occurrence 7697-37-2, Nitric acid,
occurrence
RL: OCU (Occurrence, unclassified); POL (Pollutant); OCCU (Occurrence)
(estg. volatile org. hazardous pollutant emission factors for air
pollution by waste gas from **semiconductor** manufg. processes
in Taiwan)

RE.CNT 6 THERE ARE 6 CITED REFERENCES AVAILABLE FOR THIS RECORD

RE

- (1) Anon; VLSI Manufacturing Technology 1995, P183
- (2) CTCI Corporation/Environmental Protection Agency; Handbook for Estimation of Taiwan Air Pollutant Emission-SCC Emission Factor Listing Table 1996
- (3) Department of Environmental Protection in Hsinchu County; The Project Report of Air Quality Improvement Project in Hsinchu Industry Parks 2000
- (4) Environmental Protection Agency; Air Pollution Regulation and Emission Standard for Semiconductor Manufacturing Industry 2000
- (5) Environmental Protection Agency; Handbook for Estimation of Taiwan Air Pollutant Emission 2000
- (6) Tsai, C; Chinese Association for Aerosol Research in Taiwan 2000, P3

L26 ANSWER 2 OF 18 CAPLUS COPYRIGHT 2002 ACS

AN 2001:246866 CAPLUS

DN 134:288921

TI Fabrication of **semiconductor** device

IN Moriyama, Wakako; Kai, Naoki; Hazama, Hiroaki; Nagai, Keiki; Fukazawa, Yuji; Saki, Kazuaki; Ozawa, Yoshio; Mizutsu, Yasumasa

PA Toshiba Corp., Japan; Toshiba Micro Electronics K. K.

SO Jpn. Kokai Tokkyo Koho, 14 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

IC ICM H01L021-8247

ICS H01L029-788; H01L029-792; H01L021-318; H01L027-115

CC 76-3 (Electric Phenomena)

FAN.CNT 1

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|----|--|------|----------|-----------------|----------|
| PI | JP 2001093996 | A2 | 20010406 | JP 1999-272322 | 19990927 |
| AB | The title method involves forming a gate insulator film on a semiconductor substrate by oxy-nitridation, forming a gate electrode on the gate insulator film, forming doped layers sandwiching the gate electrode, and removing the gate insulator film on the doped layers. Addnl., the method may involve forming an insulator or oxynitride film on the doped layers after removing the gate insulator film or carrying out wet oxidn. to decrease the N concn. of the gate insulator film on the doped layers. Specifically, the removal of the gate insulator film may involve etching . The gate insulator film being damaged in gate electrode processing is reconstructed. | | | | |
| ST | semiconductor device fabrication gate insulator film | | | | |
| IT | Etching
Nitridation
Oxidation
Semiconductor device fabrication
Wet oxidation
(fabrication of semiconductor device by repairing gate insulator film) | | | | |
| IT | 11105-01-4, Silicon oxynitride | | | | |

RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(fabrication of **semiconductor** device by repairing gate insulator film)

IT 56-81-5, Glycerol, uses 107-21-1, Ethylene glycol, uses 110-80-5, Ethylene glycol monoethyl ether 7664-38-2, Phosphoric acid, uses 7664-39-3, Hydrogen fluoride, uses
RL: NUU (Other use, unclassified); USES (Uses)
(fabrication of **semiconductor** device by repairing gate insulator film)

L26 ANSWER 3 OF 18 CAPLUS COPYRIGHT 2002 ACS
AN 2001:145246 CAPLUS
DN 134:171970
TI Low temperature rinse of **etching** agents in device fabrication
IN Gilton, Terry L.
PA Micron Technology, Inc., USA
SO U.S., 10 pp.
CODEN: USXXAM
DT Patent
LA English
IC ICM H01L021-3063
NCL 438745000
CC 76-3 (Electric Phenomena)
FAN.CNT 1

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|----|------------|------|----------|-----------------|----------|
| PI | US 6194326 | B1 | 20010227 | US 2000-544721 | 20000406 |

AB A wafer cleaning process is disclosed for quenching **etch** reactions while rinsing **etch** reactants and **etch** products from the wafer. Holes are **etched** through an insulating layer by reactive ion **etch**, for example. The holes might comprise contact openings over a **semiconductor** substrate, or vias through insulating layers between metal lines. An org. or polymer residue left in the holes is cleaned by a wet process. The cleaning process continues to attack sidewalls of the holes, undesirably widening them. The wafer is therefore rinsed with a rinse agent <0.degree., thermally quenching further **etching** of the sidewalls and affording greater control over the hole dimensions. At the same time, the rinse agent allows relatively rapid diffusion of **etchants** and **etch** products from narrow and deep openings. An exemplary rinse agent for such low temp. rinsing is dil. ethylene glycol.

ST rinsing **etchant** device fabrication

IT **Etching**
(**etchants**; low temp. rinse of **etching** agents in device fabrication)

IT Sputtering
(**etching**, reactive, agents; low temp. rinse of **etching** agents in device fabrication)

IT Alcohols, processes
Amines, processes
Glycols, processes
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(in low temp. rinse of **etching** agents in device fabrication)

IT Contact holes
Semiconductor device fabrication
Washing
(low temp. rinse of **etching** agents in device fabrication)

IT **Etching**
(sputter, reactive, agents; low temp. rinse of **etching** agents in device fabrication)

IT Interconnections (electric)

(vias; low temp. rinse of **etching** agents in device
 fabrication)
 IT 67-63-0, Isopropanol, uses
 RL: NUU (Other use, unclassified); USES (Uses)
 (drying agent; low temp. rinse of **etching** agents in device
 fabrication)
 IT 7664-38-2, Phosphoric acid, uses
 RL: NUU (Other use, unclassified); USES (Uses)
 (**etchant**; low temp. rinse of **etching** agents in
 device fabrication)
 IT 57-55-6, Propylene glycol, processes 107-21-1, Ethylene
 glycol, processes 7732-18-5, Water, processes
 RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical
 process); PROC (Process); USES (Uses)
 (in low temp. rinse of **etching** agents in device fabrication)
 IT 7664-41-7, Ammonia, processes
 RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical
 process); PROC (Process); USES (Uses)
 (liq.; in low temp. rinse of **etching** agents in device
 fabrication)

RE.CNT 5 THERE ARE 5 CITED REFERENCES AVAILABLE FOR THIS RECORD

RE

- (1) Aoyama; US 5630904 1997 CAPLUS
- (2) Li; US 6012469 2000 CAPLUS
- (3) Mautz; US 5476816 1995 CAPLUS
- (4) Ng; US 5946589 1999 CAPLUS
- (5) Sugihara; US 5705089 1998 CAPLUS

L26 ANSWER 4 OF 18 CAPLUS COPYRIGHT 2002 ACS

AN 2001:79329 CAPLUS

DN 134:140321

TI Method for manufacturing metal-insulator-**semiconductor**
 structures based on thin coatings of a-Si:H

IN Popescu, I. Benedict

PA Rom.

SO Rom., 8 pp.

CODEN: RUXXA3

DT Patent

LA Romanian

IC ICM H01L021-00

CC 76-3 (Electric Phenomena)

FAN.CNT 1

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|----|---|------|----------|-----------------|----------|
| PI | RO 113505 | B3 | 19980730 | RO 1992-1494 | 19921127 |
| AB | The method for manufg. metal-insulator- semiconductor structures
based on thin coatings of amorphous hydrogenated Si (a-Si:H), with
applications in thin coating technol. for manufg. of devices with field
effect (e.g., transistors with thin coatings), includes (a) depositing a
layer of Ta (4000 .ANG.) by cathodic sputtering in pure Ar atm., (b)
etching the Ta layer by HF-HNO ₃ -deionized H ₂ O mixt. (1:1:1) , (c)
vacuum depositing of an Al layer, (d)-chem. oxidn. of Al layer by
H ₃ PO ₄ -HNO ₃ -CH ₃ COOH-deionized H ₂ O mixt., (e) anodically oxidizing the 2
layers by ammonium pentaborate-ethylene glycol mixt. (with pH = 5.5-6),
resulting a Ta ₂ O ₅ layer on the Ta layer and a Al ₂ O ₃ layer on the Al layer,
(f) dissolving Al and Al ₂ O ₃ layers by H ₃ PO ₄ -deionized H ₂ O mixt. at
80.degree., and the gate-gate insulator structure was obtained. The
method includes further (g) reactive cathodic sputtering of 3 layers: SiNx
(200-400 .ANG.) in pure N ₂ , a-Si:H (1 .mu.m) in Ar + H ₂ , and SiNx
(400-1000 .ANG.) in Ar + N ₂ , (h) cathodic vapor depositing of Mo layer
(1000-5000 .ANG.), (i) centrifugally depositing an org. photoresistive
layer and heat treating at 90-100.degree. for 20-30 min, (j) UV exposing
(using the configuration face shield of a-Si:H layer) and developing, (k) | | | | |

heat treating (90-100.degree. for 20-30 min), (1) chem. corroding (H₂SO₄ + HNO₃ + deionized H₂O mixt.) Mo layer and dissolving in acetone the org. photoresist. The resulted Mo layer was used further in the process as a face shield for configurating the tri-layer SiNx/a-Si:H/SiNx, opening windows for contacting a-Si:H layer, and then dissolving the Mo face shield. On a-Si:H layer are sequenced deposited, in the same vacuum cycle: a high-doped a-Si:H layer (200-300 .ANG.) and a Ni-Cr (80:20-40:60 and 100-500 .ANG.), which is chem. corroded (using the normal electrode face shield) by Ce and ammonium nitrate + HClO₄ + deionized H₂O mixt. at 50.degree.. The high-doped a-Si:H layer is chem. corroded (through Ni-Cr face shield). An Al layer is deposited on the whole substrate surface, and using the std. photolithog. process (contact face shield) Al layer is chem. corroded and the photoresistive face shield is dissolved in acetone, and the metal-insulator-**semiconductor** structure was obtained.

The method uses: Ta₂O₅ as a gate insulator (1000-2000 .ANG.) obtained by collective anodically oxidizing, and cathodically deposition as a method for manufg. semiconductive layer of a-Si:H (.apprx.1 .mu.m), which is positioned in a sandwich structure, between 2 thin insulating layers of SiNx (200-1000 .ANG.) manufd. in the same vacuum cycle. The aim of the method is to enhance the transconductance of the devices with field effect and to avoid noxious and/or explosive gases.

ST amorphous hydrogenated silicon MIS device fabrication
IT Anodization

Etching

Heat treatment
Photolithography
Reactive sputtering
Sputtering

(in method for manufg. metal-insulator-**semiconductor** structures based on thin coatings of a-Si:H)

IT Field effect transistors
MIS devices

Semiconductor device fabrication
(method for manufg. metal-insulator-**semiconductor** structures based on thin coatings of a-Si:H)

IT Vapor deposition process
(vacuum; in method for manufg. metal-insulator-**semiconductor** structures based on thin coatings of a-Si:H)

IT 64-19-7, Acetic acid, processes 7429-90-5, Aluminum, processes 7439-98-7, Molybdenum, processes **7664-38-2**, Phosphoric acid, processes **7664-93-9**, Sulfuric acid, processes 11106-97-1 37303-98-3 187745-96-6, Chromium 20-60, nickel 40-80
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)

(in method for manufg. metal-insulator-**semiconductor** structures based on thin coatings of a-Si:H)

IT 1314-61-0P, Tantalum oxide (Ta₂O₅) 1344-28-1P, Alumina, processes 12033-89-5P, Silicon nitride, processes
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PNU (Preparation, unclassified); PREP (Preparation); PROC (Process); USES (Uses)

(in method for manufg. metal-insulator-**semiconductor** structures based on thin coatings of a-Si:H)

IT 1333-74-0, Hydrogen, processes
RL: MOA (Modifier or additive use); NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)

(in method for manufg. metal-insulator-**semiconductor** structures based on thin coatings of a-Si:H)

IT 56-81-5, Glycerin, processes **107-21-1**, Ethylene glycol, processes 1310-58-3, Potassium hydroxide, processes 6484-52-2, Ammonium nitrate, processes 7440-37-1, Argon, processes **7601-90-3**, Perchloric acid, processes 7664-39-3, Hydrogen fluoride, processes 7697-37-2, Nitric acid, processes 7727-37-9,

Nitrogen, processes 10108-73-3, Cerium nitrate 12007-89-5, Ammonium boron oxide ((NH4)B5O8)
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(in method for manufg. metal-insulator-**semiconductor** structures based on thin coatings of a-Si:H)

IT 7440-21-3, Silicon, processes
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(method for manufg. metal-insulator-**semiconductor** structures based on thin coatings of a-Si:H)

L26 ANSWER 5 OF 18 CAPLUS COPYRIGHT 2002 ACS

lucks
AN 2001:64307 CAPLUS
DN 134:124734
TI Compositions and processes for spin **etch** planarization in
semiconductor device fabrication
IN Levert, Joseph; Towery, Daniel L.
PA Alliedsignal Inc., USA
SO PCT Int. Appl., 38 pp.
CODEN: PIXXD2
DT Patent
LA English
IC ICM H01L021-321
ICS C23F003-06
CC 76-3 (Electric Phenomena)

FAN.CNT 1

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|----|---|------|----------|-----------------|----------|
| PI | WO 2001006555 | A1 | 20010125 | WO 2000-US18723 | 20000710 |
| | W: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE,
DK, EE, ES, FI, GB, GE, GH, GM, HU, ID, IL, IN, IS, JP, KE, KG,
KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX,
NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT,
UA, UG, UZ, VN, YU, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY,
DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ,
CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG | | | | |
| | US 2001054706 | A1 | 20011227 | US 1999-356487 | 19990719 |
| | EP 1198827 | A1 | 20020424 | EP 2000-947151 | 20000710 |
| | R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,
IE, SI, LT, LV, FI, RO, MK, CY, AL | | | | |

PRAI US 1999-356487 A 19990719
WO 2000-US18723 W 20000710

AB The present invention describes methods and chem. compns. for the spin **etch** planarization of surfaces, particularly Cu and Ta. An **etching** soln. is brought into contact with the upper face of a spinning wafer through a nozzle, preferably an oscillating nozzle. The **etching** soln. has a compn. that oxidizes the spinning surface, forming a passivation layer thereon. The **etching** soln. further contains reactants for removing the passivation layer exposing the underlying surface to further reaction, leading to the desired **etching** of the surface. The characteristics of the **etching** soln. are adjusted such that reactant diffusion to lower regions of the surface limits the rate of **etching**. Faster reaction occurs at higher regions of the surface lying in more rapidly moving **etching** soln. resulting in the desired planarization.

ST spin **etching** polishing **semiconductor** device
fabrication; chem mech polishing device fabrication; oxidn **etching**
device fabrication

IT Alcohols, processes
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)

(aliph.; in compns. and processes for spin **etch** planarization
in **semiconductor** device fabrication)

IT Surfactants
(anionic; in compns. and processes for spin **etch**
planarization in **semiconductor** device fabrication)

IT Surfactants
(cationic; in compns. and processes for spin **etch**
planarization in **semiconductor** device fabrication)

IT Polishing
(chem.-mech.; compns. and processes for spin **etch**
planarization in **semiconductor** device fabrication)

IT **Etching**
Integrated circuits
Semiconductor device fabrication
(compns. and processes for spin **etch** planarization in
semiconductor device fabrication)

IT Hydrocarbons, processes
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical
process); PROC (Process); USES (Uses)
(fluoro; in compns. and processes for spin **etch** planarization
in **semiconductor** device fabrication)

IT Nozzles
(for spin **etch** planarization in **semiconductor**
device fabrication)

IT Oxidizing agents
Wetting agents
(in compns. and processes for spin **etch** planarization in
semiconductor device fabrication)

IT Amines, processes
Carboxylic acids, processes
Gelatins, processes
Phenols, processes
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical
process); PROC (Process); USES (Uses)
(in compns. and processes for spin **etch** planarization in
semiconductor device fabrication)

IT Passivation
(in spin **etch** planarization in **semiconductor** device
fabrication)

IT Surfactants
(nonionic; in compns. and processes for spin **etch**
planarization in **semiconductor** device fabrication)

IT Surfactants
(org.; in compns. and processes for spin **etch** planarization
in **semiconductor** device fabrication)

IT **Etching**
(photochem.; for planarization in **semiconductor** device
fabrication)

IT Oxidation
(surface; in spin **etch** planarization in **semiconductor**
device fabrication)

IT 7440-25-7, Tantalum, processes 7440-50-8, Copper, processes
RL: DEV (Device component use); PEP (Physical, engineering or chemical
process); PROC (Process); USES (Uses)
(compns. and processes for spin **etch** planarization of)

IT 57-55-6, Propyleneglycol, processes 60-00-4, EDTA, processes
62-76-0, Sodium oxalate 64-17-5, Ethanol, processes 64-19-7, Acetic
acid, processes 67-56-1, Methanol, processes 68-04-2, Trisodium
citrate 71-23-8, n-Propanol, processes 75-89-8 77-92-9, Citric acid,
processes 87-69-4, Tartaric acid, processes 88-27-7,
2,6-Di-tert-butyl-4-[(dimethylamino)methyl]phenol 89-65-6, Erythorbic
acid 95-14-7, 1H-Benzotriazole 102-71-6, Triethanolamine, processes
104-75-6, 2-Ethylhexylamine 107-21-1, 1,2-Ethanediol, processes

128-37-0, Agidol, processes 139-33-3 144-62-7, Oxalic acid, processes
 288-36-8, 1,2,3-Triazole 288-88-0, 1H-1,2,4-Triazole 288-94-8,
 1H-Tetrazole 1303-96-4, Borax 1310-73-2, Sodium hydroxide, processes
 1333-39-7, Phenolsulfonic acid 1336-21-6, Ammonium hydroxide
 6915-15-7, Malic acid 7439-98-7D, Molybdenum, salts, processes
 7440-25-7D, Tantalum, salts, processes 7440-50-8D, Copper, salts,
 processes 7447-40-7, Potassium chloride, processes 7631-95-0, Sodium
 molybdate 7631-99-4, Sodium nitrate, processes 7647-01-0, Hydrogen
 chloride, processes 7664-38-2, Phosphoric acid, processes
 7664-39-3, Hydrogen fluoride, processes 7664-93-9, Sulfuric
 acid, processes 7697-37-2, Nitric acid, processes 7722-84-1, Hydrogen
 peroxide, processes 7733-02-0, Zinc sulfate 7758-89-6, Cuprous
 chloride 7758-98-7, Cupric sulfate, processes 7775-09-9, Sodium
 chlorate (NaClO₃) 8061-51-6, Sodium lignosulfonate 9002-89-5,
 Polyvinyl alcohol 9002-92-0, Poly(oxyethylene)lauryl ether 9004-32-4,
 Carboxymethylcellulose 12125-01-8, Ammonium fluoride 14066-19-4,
 Monohydrogen phosphate, processes 14265-44-2, Phosphate, processes
 16887-00-6, Chloride, processes 17084-08-1, Hexafluorosilicate
 26053-72-5, Diphenylsulfamic acid 27846-09-9, Iron monochloride
 89800-24-8, Laprol 602
 RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical
 process); PROC (Process); USES (Uses)
 (in compns. and processes for spin **etch** planarization in
semiconductor device fabrication)

RE.CNT 10 THERE ARE 10 CITED REFERENCES AVAILABLE FOR THIS RECORD

RE

- (1) Anon; PATENT ABSTRACTS OF JAPAN 1997, V1997(01)
- (2) Contolini; US 5486234 A 1996 CAPLUS
- (3) Gelchinski; US 4497692 A 1985 CAPLUS
- (4) Ibm; EP 0699782 A 1996 CAPLUS
- (5) Kern; RCA REVIEW 1978, V39(2), P278 CAPLUS
- (6) Samsung Electronics; DE 19928570 A 1999 CAPLUS
- (7) Sasaki; US 5770095 A 1998 CAPLUS
- (8) Sez Semiconductor-Equipment; EP 0905754 A 1999 CAPLUS
- (9) Ube Ind Ltd; JP 08236615 A 1996 CAPLUS
- (10) Unvala; JOURNAL OF THE ELECTROCHEMICAL SOCIETY 1972, V119(3), P318 CAPLUS

L26 ANSWER 6 OF 18 CAPLUS COPYRIGHT 2002 ACS

AN 2001:12778 CAPLUS

DN 134:79754

TI Acid blend for removing **etch** residue on **semiconductor**
 substrates

IN Torek, Kevin J.; Yates, Donald L.

PA Micron Technology, Inc., USA

SO PCT Int. Appl., 49 pp.

CODEN: PIXXD2

DT Patent

LA English

IC ICM H01L021-3213

ICS H01L021-306; G03F007-42

CC 76-3 (Electric Phenomena)

FAN.CNT 1

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|----|---------------|---|----------|-----------------|----------|
| PI | WO 2001001474 | A1 | 20010104 | WO 2000-US40096 | 20000605 |
| | W: | AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR,
CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU,
ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU,
LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD,
SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA,
ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM | | | |
| | RW: | GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY,
DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, | | | |

CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG
EP 1196949 A1 20020417 EP 2000-945418 20000605
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,
IE, SI, LT, LV, FI, RO
PRAI US 1999-342243 A 19990629
WO 2000-US40096 W 20000605

AB A method is presented for removing organometallic and organosilicate residues remaining after a dry **etch** process from **semiconductor** substrates. The substrate is exposed to a conditioning soln. of a F source, a nonaq. solvent, a complementary acid, and a surface passivation agent. The F source is typically HF. The nonaq. solvent is typically a polyhydric alc. such as propylene glycol. The complementary acid is typically either H₃PO₄ or HCl. The surface passivation agent is typically a carboxylic acid such as citric acid. Exposing the substrate to the conditioning soln. removes the remaining dry **etch** residues while minimizing removal of material from desired substrate features.

ST **etching** residue removal acid blend **semiconductor** device fabrication

IT Passivation
 semiconductor device fabrication
 (acid blend for removing **etch** residue on **semiconductor** substrates)

IT **Etching**
 (dry; acid blend for removing **etch** residue on **semiconductor** substrates)

IT Chelating agents
 (**etching** passivation agent; acid blend for removing **etch** residue on **semiconductor** substrates)

IT Alcohols, processes
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
 (polyhydric; acid blend for removing **etch** residue on **semiconductor** substrates)

IT 515-98-0, Ammonium lactate **10043-35-3**, Boric acid, processes
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
 (anti-**etch** agent; acid blend for removing **etch** residue on **semiconductor** substrates)

IT 124-38-9, Carbon dioxide, processes 7727-37-9, Nitrogen, processes
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
 (**etch** rinsing process gas; acid blend for removing **etch** residue on **semiconductor** substrates)

IT 7647-01-0, Hydrogen chloride, processes **7664-38-2**, Phosphoric acid, processes 7664-39-3, Hydrogen fluoride, processes 12125-01-8, Ammonium fluoride
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
 (**etchant**; acid blend for removing **etch** residue on **semiconductor** substrates)

IT 60-00-4, EDTA, processes 64-19-7, Acetic acid, processes 77-92-9, Citric acid, processes 62624-30-0, Ascorbic acid
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
 (**etching** passivation agent; acid blend for removing **etch** residue on **semiconductor** substrates)

IT **57-55-6**, Propylene glycol, processes 67-63-0, Isopropyl alcohol, processes 67-68-5, Dimethylsulfoxide, processes **107-21-1**, Ethylene glycol, processes 108-32-7, Propylene carbonate 109-99-9, Tetrahydrofuran, processes
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)

(**etching** solvent; acid blend for removing **etch** residue on **semiconductor** substrates)

IT 463-79-6, Carbonic acid, processes

RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(rinsing agent; acid blend for removing **etch** residue on **semiconductor** substrates)

RE.CNT 4 THERE ARE 4 CITED REFERENCES AVAILABLE FOR THIS RECORD

RE

(1) Grieger; US 5855811 A 1999 CAPLUS
(2) Mitsubishi Gas Chemical; EP 0827188 A 1998 CAPLUS
(3) Wakp Pure Chemicals; EP 0812011 A 1997 CAPLUS
(4) Ward; US 5698503 A 1997 CAPLUS

Inventor L26 ANSWER 7 OF 18 CAPLUS COPYRIGHT 2002 ACS
AN 2000:725881 CAPLUS

DN 133:289930

TI Selective **etching** of doped from undoped polysilicon in **semiconductor** device fabrication

IN Mercaldi, Garry A.; Yates, Donald L.

PA Micron Technology, Inc., USA

SO PCT Int. Appl., 31 pp.

CODEN: PIXXD2

DT Patent

LA English

IC ICM H01L021-306

ICS H01L021-3213; C23F001-00

CC 76-3 (Electric Phenomena)

Section cross-reference(s): 21

FAN.CNT 1

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------|---|------|----------|-----------------|----------|
| PI | WO 2000060651 | A1 | 20001012 | WO 2000-US8939 | 20000405 |
| | W: AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM, EE, ES, FI, GB, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM | | | | |
| | RW: GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG | | | | |
| | US 2001004553 | A1 | 20010621 | US 1999-285773 | 19990405 |
| | EP 1177575 | A1 | 20020206 | EP 2000-921671 | 20000405 |
| | R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO | | | | |
| | US 6316370 | B1 | 20011113 | US 2000-644699 | 20000824 |
| PRAI | US 1999-285773 | A | 19990405 | | |
| | WO 2000-US8939 | W | 20000405 | | |

AB The present invention provides an **etching** compn. which includes a polyhydric alc. in combination with two inorg. acids. Preferably the **etching** compn. of the present invention is a mixt. of a glycol, nitric acid and hydrofluoric acid, with propylene glycol being preferred. The **etching** compn. of the present invention achieves a selectivity of greater than 70:1, doped material to undoped material. The present invention provides an **etching** formulation which has increased selectivity of doped polysilicon to undoped polysilicon and provides an efficient integrated circuit fabrication process without requiring time consuming and costly processing modifications to the **etching** app. or prodn. app.

ST hydric alc inorg acid selective **etching** doping silicon; propylene glycol nitric hydrofluoric acid **etching** **semiconductor** device fabrication

IT Densification
(BSPG; and selective **etching** in **semiconductor** device fabrication)

IT Annealing
(and selective **etching** of doped from undoped polysilicon in **semiconductor** device fabrication)

IT Glycols, processes
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(**etchants**; in selective **etching** of doped from undoped polysilicon in **semiconductor** device fabrication)

IT Borophosphosilicate glasses
RL: PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(in selective **etching** of doped from undoped polysilicon in **semiconductor** device fabrication)

IT Acids, processes
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(inorg., **etchants**; in selective **etching** of doped from undoped polysilicon in **semiconductor** device fabrication)

IT Alcohols, processes
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(polyhydric, **etchants**; in selective **etching** of doped from undoped polysilicon in **semiconductor** device fabrication)

IT **Semiconductor** device fabrication
(selective **etching** of doped from undoped polysilicon in)

IT Doping
(selective **etching** of doped from undoped polysilicon in **semiconductor** device fabrication)

IT **Etching**
(selective; of doped from undoped polysilicon in **semiconductor** device fabrication)

IT 7440-56-4, Germanium, processes
RL: PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(doped; selective **etching** of)

IT 50-70-4, Sorbitol, processes 57-55-6, Propylene glycol, processes 64-17-5, Ethanol, processes 67-63-0, Isopropanol, processes 71-23-8, Propanol, processes 71-36-3, n-Butanol, processes 78-83-1, Iso-butanol, processes 106-69-4, 1,2,6-Hexanetriol 107-21-1, Ethylene glycol, processes 107-41-5, Hexylene glycol 107-88-0, Butylene glycol 111-29-5, 1,5-Pentanediol 463-79-6, Carbonic acid, processes 7601-90-3, Perchloric acid, processes 7664-39-3, Hydrofluoric acid, processes 7664-93-9, Sulfuric acid, processes 7697-37-2, Nitric acid, processes 7782-99-2, Sulfurous acid, processes 10043-35-3, Boric acid, processes 25265-71-8, Dipropylene glycol 54289-82-6
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(**etchants**; in selective **etching** of doped from undoped polysilicon in **semiconductor** device fabrication)

IT 7631-86-9, Silica, processes
RL: PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(in selective **etching** of doped from undoped polysilicon in **semiconductor** device fabrication)

IT 7440-21-3, Silicon, processes
RL: PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)

(polycryst.; selective **etching** of doped from undoped polysilicon in **semiconductor** device fabrication)

RE.CNT 9 THERE ARE 9 CITED REFERENCES AVAILABLE FOR THIS RECORD

RE

- (1) Anon; PATENT ABSTRACTS OF JAPAN 1984, V008(058), PP-261
- (2) Anon; PATENT ABSTRACTS OF JAPAN 1993, V017(681), PP-1660
- (3) Baeslack, W; MATERIALS CHARACTERIZATION 1993, V31(4), P197 CAPLUS
- (4) Holoubek Jiri Ing; CS 272371 B 1991 CAPLUS
- (5) Kogyo Gijutsuin; JP 58207009 A 1983 CAPLUS
- (6) Sez Semiconduct Equip Zubehoer; EP 0905754 A 1999 CAPLUS
- (7) Sumitomo Metal Ind Ltd; JP 05231996 A 1993
- (8) Takeuchi Hiroshi; US 5017513 A 1991 CAPLUS
- (9) Woo, S; US 5518966 A 1996 CAPLUS

L26 ANSWER 8 OF 18 CAPLUS COPYRIGHT 2002 ACS

AN 2000:628404 CAPLUS

DN 133:201939

TI Method and system to uniformly **etch** substrates using an **etching** composition comprising a fluoride ion source and a hydrogen ion source

IN Christenson, Kurt K.

PA Fsi International, Inc., USA

SO PCT Int. Appl., 35 pp.

CODEN: PIXXD2

DT Patent

LA English

IC ICM H01L021-311

 ICS H01L021-306; H01L021-00

CC 76-11 (Electric Phenomena)

FAN.CNT 1

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|----|--|------|----------|-----------------|----------|
| PI | WO 2000052747 | A1 | 20000908 | WO 2000-US5484 | 20000302 |
| | W: CN, JP, KR | | | | |
| | RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE | | | | |

PRAI US 1999-261786 A 19990303

AB The present invention provides methods and a system for uniformly plasma **etching** substrates. Specifically, the method and system of the present invention provide for the nonimmersive contact of the substrate to be **etched** with an **etching** compn. comprising a F- ion source and a H ion source. By using an **etching** compn. comprising such components, not only is the **etching** of traditional substrate materials, i.e., Si oxide, improved, but the **etching** of substrate materials traditionally difficult to **etch** satisfactorily, i.e., Si nitride, is made possible.

ST fluoride hydrogen ion **etching** app **semiconductor** device fabrication

IT **Etching**

Etching apparatus

 Nozzles

Semiconductor device fabrication

 Solvents

 (method and system to uniformly **etch** substrates using **etching** compn. comprising fluoride ion source and hydrogen ion source)

IT Acids, processes

 RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)

 (method and system to uniformly **etch** substrates using **etching** compn. comprising fluoride ion source and hydrogen ion source)

IT **Etching**

(spray; method and system to uniformly **etch** substrates using **etching** compn. comprising fluoride ion source and hydrogen ion source)

IT 56-81-5, Glycerol, processes 64-19-7, Acetic acid, processes 107-21-1, Ethylene glycol, processes 7647-01-0, Hydrogen chloride, processes 7664-93-9, Sulfuric acid, processes 7697-37-2, Nitric acid, processes 7732-18-5, Water, processes 12125-01-8, Ammonium fluoride 12408-02-5, Hydrogen ion, processes 16984-48-8, Fluoride, processes
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(method and system to uniformly **etch** substrates using **etching** compn. comprising fluoride ion source and hydrogen ion source)

IT 7664-39-3, Hydrogen fluoride, processes
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); RCT (Reactant); PROC (Process); RACT (Reactant or reagent); USES (Uses)
(method and system to uniformly **etch** substrates using **etching** compn. comprising fluoride ion source and hydrogen ion source)

IT 12033-89-5, Silicon nitride, processes
RL: PEP (Physical, engineering or chemical process); RCT (Reactant); TEM (Technical or engineered material use); PROC (Process); RACT (Reactant or reagent); USES (Uses)
(method and system to uniformly **etch** substrates using **etching** compn. comprising fluoride ion source and hydrogen ion source)

IT 7631-86-9, Silicon dioxide, processes
RL: PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(method and system to uniformly **etch** substrates using **etching** compn. comprising fluoride ion source and hydrogen ion source)

RE.CNT 9 THERE ARE 9 CITED REFERENCES AVAILABLE FOR THIS RECORD

RE

(1) Christenson, K; SOLID STATE TECHNOLOGY 1997, V40(12), P55 CAPLUS
(2) Deckert, C; US 4269654 A 1981 CAPLUS
(3) Gaulhofer, E; SOLID STATE TECHNOLOGY 1991, V34(5), P57 CAPLUS
(4) Lee, K; WO 9831768 A 1998 CAPLUS
(5) Muraoka, H; US 5681398 A 1997 CAPLUS
(6) Park, J; US 5087323 A 1992
(7) Schnegg, A; US 4971654 A 1990 CAPLUS
(8) Stmicroelectronics Sa; FR 2769248 A 1999 CAPLUS
(9) Ziger, D; US 5472562 A 1995 CAPLUS

L26 ANSWER 9 OF 18 CAPLUS COPYRIGHT 2002 ACS

AN 2000:209784 CAPLUS

DN 132:244962

TI Process for wet **etching** a **semiconductor** structure

IN Claussen, Wilhelm; Vogt, Mirko; Lorenz, Barbara; Sperlich, Hans-peter; Penner, Klaus

PA Siemens A.-G., Germany

SO Eur. Pat. Appl., 7 pp.

CODEN: EPXXDW

DT Patent

LA German

IC ICM H01L021-311

ICS H01L021-033; H01L021-027

CC 76-3 (Electric Phenomena)

FAN.CNT 1

PATENT NO. KIND DATE

APPLICATION NO. DATE

PI EP 989598 A2 20000329 EP 1999-117981 19990915
 R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,
 IE, SI, LT, LV, FI, RO
 DE 19844102 A1 20000406 DE 1998-19844102 19980925
 DE 19844102 C2 20000720
 TW 460974 B 20011021 TW 1999-88116195 19990920
 US 6245640 B1 20010612 US 1999-407263 19990927
 PRAI DE 1998-19844102 A 19980925

AB A dielec. antireflective coating is applied to a doped silicon oxide hard mask film using PECVD without interrupting the vacuum. The silicon oxide film is then structured into a hard mask and deep trench **etching** is, for example, applied. The hard mask is removed in a HF/H₂SO₄-mixt. or in a HF/ethylene-glycol mixt. at a high **etching** rate. By the application of a HF/ethylene-glycol mixt. an intermediate film under the mask can also be removed to a pre-dtd. extent. This integration of two wet **etching** steps represent a great simplification compared to the existing art of wet **etching** in two steps.

ST wet **etching semiconductor** structure dielec
 antireflective coating silicon oxide; PECVD antireflective coating doped silicon oxide hard mask; hydrogen fluoride sulfuric acid ethylene glycol **etchant semiconductor** structure

IT Electric insulators
 (antireflective film; process for wet **etching** a **semiconductor** structure)

IT Vapor deposition process
 (plasma; process for wet **etching** a **semiconductor** structure)

IT Antireflective films
 Doping
Etching
Etching masks
Semiconductor devices
 Vacuum
 (process for wet **etching** a **semiconductor** structure)

IT 7631-86-9, Silica, processes
 RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
 (process for wet **etching** a **semiconductor** structure)

IT 107-21-1, Ethylene-glycol, processes 7664-39-3, Hydrogen fluoride, processes 7664-93-9, Sulfuric acid, processes
 RL: PEP (Physical, engineering or chemical process); RCT (Reactant); PROC (Process); RACT (Reactant or reagent)
 (process for wet **etching** a **semiconductor** structure)

L26 ANSWER 10 OF 18 CAPLUS COPYRIGHT 2002 ACS
 AN 1999:753440 CAPLUS
 DN 131:359104
 TI Stripping compositions for removing plasma **etching** residues from **semiconductor** substrates
 IN Wojtczak, William A.; Guan, George; Nguyen, Long
 PA Advanced Chemical Systems International, Inc., USA
 SO PCT Int. Appl., 15 pp.
 CODEN: PIXXD2
 DT Patent
 LA English
 IC ICM G03F007-30
 ICS G03F007-32
 CC 76-3 (Electric Phenomena)
 FAN.CNT 1

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|----|---------------------------|------|----------|-----------------|----------|
| PI | WO 9960447 | A1 | 19991125 | WO 1999-US10895 | 19990517 |
| | W: CA, ID, IL, JP, KR, SG | | | | |

RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL,
 PT, SE
 EP 1125168 A1 20010822 EP 1999-924300 19990517
 R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,
 IE, FI
 US 6306807 B1 20011023 US 1999-312933 19990517
 JP 2002516476 T2 20020604 JP 2000-550002 19990517
 US 2001008878 A1 20010719 US 2001-801543 20010307
 PRAI US 1998-85879P P 19980518
 US 1999-312933 A1 19990517
 WO 1999-US10895 W 19990517

AB The present invention comprises formulations for stripping wafer residues which originate from a halogen based plasma metal **etching** followed by O plasma ashing. The formulations contain the following general components (wt. %): Boric Acid 2-17 %, Org. amine or mixt. of amines 35-70 %, H₂O 20-45 %, Glycol solvent (optional) 0-5 %, Chelating agent (optional) 0-17%. The preferred amines are: Monoethanolamine (MEA), Triethanolamine (TEA).
 ST stripping compn plasma **etching** residue; boric acid stripping compn plasma **etching** residue; org amine stripping compn plasma **etching** residue; glycol stripping compn plasma **etching** residue; chelating agent stripping compn plasma **etching** residue
 IT Chelating agents
 (in stripping compns. for removing plasma **etching** residues from **semiconductor** substrates)
 IT Amines, uses
 Glycols, uses
 RL: TEM (Technical or engineered material use); USES (Uses)
 (in stripping compns. for removing plasma **etching** residues from **semiconductor** substrates)
 IT Halogens
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (plasma **etchants**; stripping compns. for removing plasma **etching** residues from **semiconductor** substrates)
 IT **Etching**
 (plasma; stripping compns. for removing plasma **etching** residues from **semiconductor** substrates)
 IT Cleaning solvents
 Composition
 Mixtures
 Scouring agents
Semiconductor device fabrication
 (stripping compns. for removing plasma **etching** residues from **semiconductor** substrates)
 IT 50-21-5, Lactic acid, uses 90-02-8, Salicylaldehyde, uses 102-71-6, Triethanolamine, uses 107-21-1, Ethylene glycol, uses 120-80-9, Catechol, uses 141-43-5, Monoethanolamine, uses 5977-14-0, Acetoacetamide 10043-35-3, Boric Acid, uses
 RL: TEM (Technical or engineered material use); USES (Uses)
 (in stripping compns. for removing plasma **etching** residues from **semiconductor** substrates)
 IT 7782-44-7, Oxygen, reactions
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (plasma **etchants**; stripping compns. for removing plasma **etching** residues from **semiconductor** substrates)
 IT 7429-90-5, Aluminum, processes 7440-21-3, Silicon, processes 7631-86-9, Silica, processes 25583-20-4, Titanium mononitride
 RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
 (stripping compns. for removing plasma **etching** residues from **semiconductor** substrates)

RE.CNT 2 THERE ARE 2 CITED REFERENCES AVAILABLE FOR THIS RECORD
 RE

(1) Lenack; US 4956110 1990 CAPLUS
(2) Marx; US 4759872 1988 CAPLUS

L26 ANSWER 11 OF 18 CAPLUS COPYRIGHT 2002 ACS
AN 1999:664763 CAPLUS
DN 131:315551
TI Fabrication of smooth GaN-based laser facets
AU Stocker, D. A.; Schubert, E. F.; Boutros, K. S.; Redwing, J. M.
CS Center for Photonics Research, Boston University, Boston, MA, 02215, USA
SO Materials Research Society Symposium Proceedings (1999), 537(GaN and Related Alloys), G7.5/1-G7.5/6
CODEN: MRSPDH; ISSN: 0272-9172
PB Materials Research Society
DT Journal
LA English
CC 73-10 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
Section cross-reference(s): 72, 76
AB A method is presented for fabricating fully wet-etched InGaN/GaN laser cavities using photoenhanced electrochem. wet etching followed by crystallog. wet etching. Crystallog. wet chem. etching of n- and p-type GaN grown on c-plane sapphire is achieved using H3PO4 and various hydroxides, with etch rates $1.0 \text{ to } 3.2 \text{ } \mu\text{m/min}$. The crystallog. GaN etch planes are {0001}, {10.hivin.10}, {10.hivin.1.hivin.1}, {10.hivin.1.hivin.2}, and {10.hivin.13}. The vertical {10.hivin.10} planes appear perfectly smooth when viewed with a field-effect scanning electron microscope (FESEM), indicating a surface roughness $< 5 \text{ nm}$, suitable for laser facets. The etch rate and crystallog. nature for the various etching solns. are independent of cond., as shown by seamless etching of a p-GaN/undoped, high-resistivity GaN homojunction.
ST gallium nitride laser facet etching; photoenhanced etching potassium hydroxide gallium nitride
IT Etching
(electrochem., photoenhanced; of smooth laser facets on gallium nitride based cavities)
IT Etching
(photoenhanced etching of smooth laser facets on gallium nitride based cavities)
IT Semiconductor device fabrication
Semiconductor lasers
Surface roughness
(wet etching of smooth laser facets on gallium nitride based cavities)
IT 75-59-2, Tetramethylammonium hydroxide 77-98-5, Tetraethylammonium hydroxide
RL: PEP (Physical, engineering or chemical process); PROC (Process)
(etching rate of gallium nitride in)
IT 1310-73-2, Sodium hydroxide, processes
RL: PEP (Physical, engineering or chemical process); PROC (Process)
(etching rate of gallium nitride in NaOH/ethylene glycol)
IT 1310-58-3, Potassium hydroxide, processes
RL: PEP (Physical, engineering or chemical process); PROC (Process)
(etching rate of gallium nitride in molten potassium hydroxide and KOH/ethylene glycol)
IT 107-21-1, 1,2-Ethanediol, uses
RL: NUU (Other use, unclassified); USES (Uses)
(etching rate of gallium nitride using potassium hydroxide or sodium hydroxide in)
IT 1344-28-1, Aluminum oxide (Al2O3), uses
RL: DEV (Device component use); USES (Uses)
(laser substrate; wet etching of smooth laser facets on gallium nitride based cavities)

IT 64-19-7, Acetic acid, processes 7647-01-0, Hydrochloric acid, processes
7664-93-9, Sulfuric acid, processes 7697-37-2, Nitric acid,
processes
RL: PEP (Physical, engineering or chemical process); PROC (Process)
(no measurable **etching** of gallium nitride in)

IT 7440-21-3, Silicon, uses
RL: DEV (Device component use); MOA (Modifier or additive use); USES
(Uses)
(wet **etching** of silicon-doped indium gallium nitride laser
cavity)

IT 25617-97-4, Gallium nitride (GaN) 156309-21-6, Gallium indium nitride
(Ga0.91In0.09N)
RL: DEV (Device component use); PEP (Physical, engineering or chemical
process); PRP (Properties); PROC (Process); USES (Uses)
(wet **etching** of smooth laser facets on gallium nitride based
cavities)

IT **7664-38-2**, Phosphoric acid, processes
RL: PEP (Physical, engineering or chemical process); PROC (Process)
(wet **etching** of smooth laser facets on gallium nitride based
cavities)

RE.CNT 17 THERE ARE 17 CITED REFERENCES AVAILABLE FOR THIS RECORD

RE

- (1) Binet, F; Appl Phys Lett 1998, V72, P960 CAPLUS
- (2) Gillis, H; JOM 1996, V48(8), P50 CAPLUS
- (3) Kneissl, M; Appl Phys Lett 1998, V72, P1539 CAPLUS
- (4) Kozawa, T; J Electrochem Soc 1996, V143, PL17 CAPLUS
- (5) Lu, H; J Electrochem Soc 1997, V144, PL8 CAPLUS
- (6) Minsky, M; Appl Phys Lett 1996, V68, P1531 CAPLUS
- (7) Nakamura, S; Jpn J Appl Phys 1996, V35, PL74 CAPLUS
- (8) Peng, L; Appl Phys Lett 1998, V72, P939 CAPLUS
- (9) Ren, F; Journal of Electronic Materials 1997, V26, P1287 CAPLUS
- (10) Seelmann-Eggebert, M; Appl Phys Lett 1997, V71, P2635 CAPLUS
- (11) Shintani, A; J Electrochem Soc 1976, V123, P706 CAPLUS
- (12) Stocker, D; Appl Phys Lett 1998, V73, P1925 CAPLUS
- (13) Stocker, D; Appl Phys Lett 1998, V73, P2654 CAPLUS
- (14) Stocker, D; Electron Lett 1998, V34, P373 CAPLUS
- (15) Vartuli, C; Solid-State Electronics 1997, V41, P1947 CAPLUS
- (16) Youtsey, C; Appl Phys Lett 1998, V72, P560 CAPLUS
- (17) Zolper, J; MRS Bulletin 1997, V22(2), P36 CAPLUS

L26 ANSWER 12 OF 18 CAPLUS COPYRIGHT 2002 ACS

date

AN 1999:538084 CAPLUS

DN 131:152697

TI Device and method for wet-**etching** of **semiconductor**
disks

IN Summitsch, Franz; Wagner, Gerald

PA SEZ Semiconductor-Equipment Zubehoer fuer die Halbleiterfertigung A.-G.,
Austria

SO Ger. Offen., 8 pp.

CODEN: GWXXBX

DT Patent

LA German

IC ICM H01L021-304

ICS C23F001-16

CC 76-3 (Electric Phenomena)

FAN.CNT 1

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|----|-------------|------|----------|------------------|-----------------|
| PI | DE 19805525 | A1 | 19990819 | DE 1998-19805525 | <u>19980211</u> |
| | DE 19805525 | C2 | 20020613 | | |
| IT | 1309069 | B1 | 20020116 | IT 1999-MI120 | 19990122 |
| GB | 2334374 | A1 | 19990818 | GB 1999-1810 | <u>19990127</u> |
| JP | 11274147 | A2 | 19991008 | JP 1999-27834 | 19990204 |

JP 3242082 B2 20011225 TW 1999-88102080 19990210
TW 421830 B 20010211 US 1999-248094 19990211
US 6162739 A 20001219
PRAI DE 1998-19805525 A 19980211

AB An **etching** medium contains an agent which affects viscosity, surface energy, and/or vapor pressure of the **etching** medium in addn. to HF or a (HF + NH4F) combination which is effective for wet **etching** of **semiconductor** disks, esp. Si wafers. During **etching**, a SiO2 layer is removed from the upper side, an edge, and a defined edge area of the lower side of the Si wafer. Under-**etching** in a defined area attains that the edge of the SiO2 layer remaining on the bottom side of the wafer is smooth.

ST wet **etching semiconductor**; silicon wafer wet
etching

IT **Etching**
(of **semiconductor** disks)

IT **Semiconductor** devices
(wet-**etching** of)

IT 50-21-5, Lactic acid, uses 56-81-5, Glycerol, uses 64-17-5, Ethanol, uses 64-18-6, Formic acid, uses 64-19-7, Acetic acid, uses 65-85-0, Benzoic acid, uses 67-56-1, Methanol, uses 67-63-0, Isopropanol, uses 67-64-1, Acetone, uses 71-36-3, Butanol, uses 77-92-9, Citric acid, uses 79-09-4, Propionic acid, uses 107-21-1, Ethylene glycol, uses 107-92-6, Butyric acid, uses 111-46-6, Diethylene glycol, uses 124-38-9, Carbon dioxide, uses 141-78-6, Acetic acid ethyl ester, uses 144-55-8, Sodium bicarbonate, uses 144-62-7, Oxalic acid, uses 7647-01-0, Hydrochloric acid, uses 7664-38-2, Phosphoric acid, uses 7664-93-9, Sulfuric acid, uses

RL: MOA (Modifier or additive use); USES (Uses)
(in **etching** medium for silicon wafers)

IT 7664-39-3, Hydrofluoric acid, processes 12125-01-8, Ammonium fluoride
RL: PEP (Physical, engineering or chemical process); PROC (Process)
(in wet-**etching** of silicon wafers)

IT 7440-21-3, Silicon, processes
RL: PEP (Physical, engineering or chemical process); PROC (Process)
(wet-**etching** of silicon wafers)

RE.CNT 7 THERE ARE 7 CITED REFERENCES AVAILABLE FOR THIS RECORD

RE

- (1) Anon; JP 09181026 A
- (2) Anon; US 4087367
- (3) Anon; US 4795582 CAPLUS
- (4) Anon; US 4871422 CAPLUS
- (5) Anon; US 5439553 CAPLUS
- (6) Gaulhofer, E; Solid State Technology 1991, 219, P57
- (7) Monk, D; J Electrochem Soc 1994, V141(1), P264 CAPLUS

L26 ANSWER 13 OF 18 CAPLUS COPYRIGHT 2002 ACS

AN 1997:719819 CAPLUS

DN 128:17842

TI Cleaning solutions for **semiconductor** circuits and fabrication of circuit thereof

IN Hasemi, Takashi; Ikeda, Hidetoshi; Aoyama, Tetsuo

PA Mitsubishi Gas Chemical Co., Inc., Japan

SO Jpn. Kokai Tokkyo Koho, 5 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

IC ICM H01L021-304

ICS H01L021-027; H01L021-308

CC 76-3 (Electric Phenomena)

FAN.CNT 1

PATENT NO.

KIND DATE

APPLICATION NO. DATE

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PI JP 09283481 A2 19971031 JP 1996-91520 19960412
AB The title cleaning solns. are an aq. soln. contg. 0.1-40 wt.% H₃PO₄ oxo-acid and anticorrosive org. compd. 5-50 wt.%. The cleaning solns. are applied to removal of photoresist residues remained on the sidewalls of a photoresist in the title fabrication. The cleaning eliminates after-corrosions by removing the resist residues which are generated during dry **etching**.
ST phosphoric acid oxoacid cleaning **semiconductor** circuit; org anticorrosive cleaning resist residue removal
IT Electric circuits
 Semiconductor materials
 (cleaning solns. for **semiconductor** circuits and fabrication of circuit thereof)
IT Cleaning
 (**etching** residue removal, **semiconductor** circuits, soln. for; cleaning solns. for **semiconductor** circuits and fabrication of circuit thereof)
IT Photoresists
 (**etching** residue removal; cleaning solns. for **semiconductor** circuits and fabrication of circuit thereof)
IT Glycerides, properties
RL: MOA (Modifier or additive use); PEP (Physical, engineering or chemical process); PRP (Properties); PROC (Process); USES (Uses)
 (org. corrosion inhibitor; cleaning solns. for **semiconductor** circuits and fabrication of circuit thereof)
IT Corrosion inhibitors
 (org.; cleaning solns. for **semiconductor** circuits and fabrication of circuit thereof)
IT Acids, properties
RL: NUU (Other use, unclassified); PRP (Properties); USES (Uses)
 (oxo, **etching** residue removal by; cleaning solns. for **semiconductor** circuits and fabrication of circuit thereof)
IT **Etching**
 (plasma, residue removal from; cleaning solns. for **semiconductor** circuits and fabrication of circuit thereof)
IT 7440-32-6, Titanium, properties 25583-20-4, Titanium nitride (TiN)
37254-60-7
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PRP (Properties); PROC (Process); USES (Uses)
 (circuit multilayer, corrosion resistance; cleaning solns. for **semiconductor** circuits and fabrication of circuit thereof)
IT 7664-38-2, Phosphoric acid, properties
RL: NUU (Other use, unclassified); PRP (Properties); USES (Uses)
 (**etching** residue removal by; cleaning solns. for **semiconductor** circuits and fabrication of circuit thereof)
IT 50-70-4, Sorbitol, properties 68-12-2, N,N-Dimethylformamide, properties
RL: MOA (Modifier or additive use); PEP (Physical, engineering or chemical process); PRP (Properties); PROC (Process); USES (Uses)
 (org. corrosion inhibitor; cleaning solns. for **semiconductor** circuits and fabrication of circuit thereof)
L26 ANSWER 14 OF 18 CAPLUS COPYRIGHT 2002 ACS
AN 1997:436984 CAPLUS
DN 127:143452
TI Investigation of anodic dissolution of mercury cadmium telluride by nonsteady-state method
AU Baibatyrov, E. N.; Mambetkaziev, E. A.; Nikitin, A. N.
CS Kazakhstan
SO Vestnik Ministerstva Nauki--Akademii Nauk Respubliki Kazakhstan (1996), (6), 42-47
CODEN: VMRKFT
PB Gylym

DT Journal
 LA Russian
 CC 76-3 (Electric Phenomena)
 Section cross-reference(s): 72
 AB Initial dissoln. and surface **etching** in the Cd-Hg telluride were detd. in aq.-org. soln. with H₂SO₄ and ethylene glycol, with or without the pretreatment by cathodic polarization at 0.1 V. The specimens were single-crystal chips of Cr_{0.2}Hg_{0.8}Te in electrochem cell. The initial surface dissoln. was assocd. with ionization of a Cd atom and the assocd. formation of a vacancy, followed by the vacancy interaction with Hg or Te for their dissoln. Potentiostatic curves of anodic dissoln. were evaluated.
 ST mercury cadmium telluride anodic dissoln; telluride **semiconductor** anodic dissoln test
 IT **Etching**
 (of telluride; anodic dissoln. of mercury cadmium telluride single crystal in acidic soln.)
 IT **Semiconductor** materials
 (telluride; anodic dissoln. of mercury cadmium telluride single crystal in acidic soln.)
 IT 107-21-1, Ethylene glycol, uses 7664-93-9, Sulfuric acid, uses
 RL: MOA (Modifier or additive use); USES (Uses)
 (corrosion by soln. contg.; anodic dissoln. of mercury cadmium telluride single crystal in acidic soln.)
 IT 29870-72-2, Cadmium mercury telluride
 RL: PRP (Properties)
 (**semiconductor**; anodic dissoln. of mercury cadmium telluride single crystal in acidic soln.)

L26 ANSWER 15 OF 18 CAPLUS COPYRIGHT 2002 ACS
 AN 1995:856638 CAPLUS
 DN 123:270287
 TI **Semiconductor** laser and its manufacture
 IN Oosawa, Yasuhiro
 PA Ricoh Kk, Japan
 SO Jpn. Kokai Tokkyo Koho, 8 pp.
 CODEN: JKXXAF
 DT Patent
 LA Japanese
 IC ICM H01S003-18
 ICS H01L033-00
 CC 73-10 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
 Section cross-reference(s): 76

FAN.CNT 1

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|----|-------------|------|----------|-----------------|----------|
| PI | JP 07202339 | A2 | 19950804 | JP 1993-337404 | 19931228 |

AB The title laser consists of a 1st elec. cond. (x)-type **semiconductor** substrate successively coated with an x-type 1st cladding layer, an active layer, a 2nd elec. cond. (y)-type 2nd cladding layer, a y-type 3rd cladding layer, a y-type striped mesa-structure 4th cladding layer, a y-type striped mesa-structure 5th cladding layer, and a y-type striped mesa-structure cap layer, where the stripe width of the 4th cladding layer is narrower than that of the 5th cladding layer and the cap layer. The laser is manufd. by nonselectively **etching** to form striped mesas and selectively **etching** to form an undercut. Increase of contact resistance on the mesa was prevented.
 ST **semiconductor** laser striped mesa structure; **etching**
semiconductor laser mesa structure
 IT **Etching**
 Lasers

(semiconductor laser and its manuf. with etching)

IT 1303-00-0, Gallium arsenide, uses 12774-40-2, Aluminum gallium arsenide (Al0.5Ga0.5As) 106070-25-1, Gallium indium arsenide [(Ga,In)As] 106218-96-6, Aluminum gallium arsenide (Al0.4Ga0.6As) 106312-09-8, Aluminum gallium arsenide (Al0.2Ga0.8As) 106389-87-1, Aluminum gallium arsenide (Al0.35Ga0.65As) 106804-30-2, Aluminum gallium arsenide (Al0.6Ga0.4As) 107477-00-9, Aluminum gallium arsenide (Al0.37Ga0.63As)
 RL: DEV (Device component use); USES (Uses)

(semiconductor laser and its manuf. with etching)

IT 75-46-7, Trifluoromethane 107-21-1, Ethylene glycol, uses 7664-38-2, Phosphoric acid, uses 7664-39-3, Hydrofluoric acid, uses 7722-84-1, Hydrogen peroxide, uses 7782-50-5, Chlorine, uses 12125-01-8, Ammonium fluoride
 RL: NUU (Other use, unclassified); USES (Uses)

(semiconductor laser and its manuf. with etching)

L26 ANSWER 16 OF 18 CAPLUS COPYRIGHT 2002 ACS

AN 1995:490358 CAPLUS

DN 122:228726

TI Rinsing solutions for resist removal in manufacture of semiconductor devices and its

IN Goto, Hideto; Myazaki, Masao; Mori, Kyoto

PA Texas Instruments Japan, Japan; Kanto Kagaku

SO Jpn. Kokai Tokkyo Koho, 6 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

IC ICM H01L021-304

ICS C11D017-00; C23G005-032; H05K003-26

CC 76-3 (Electric Phenomena)

FAN.CNT 1

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|----|--|------|----------|-----------------|----------|
| PI | JP 07037846 | A2 | 19950207 | JP 1993-224895 | 19930722 |
| AB | The rinsing solns. contain water-sol. monohydric alcs. and acids. The manufg. process involves the following steps: (1) forming a C-contg. Al conductive layer on a semiconductor substrate, (2) etching the conductive layer with a resist mask, (3) removing the resist with alkali, and (4) rinsing with the soln. The rinsing soln. is noncorrosive to Al-Si-Cu wiring. | | | | |
| ST | noncorrosive rinse soln resist semiconductor; acid alc rinsing semiconductor device | | | | |
| IT | Semiconductor devices
(noncorrosive rinsing soln. for alk. resist removal in semiconductor device manuf.) | | | | |
| IT | 50-70-4, D-Sorbitol, uses 64-17-5, Ethanol, uses 64-19-7, Acetic acid, uses 65-85-0, Benzoic acid, uses 67-56-1, Methanol, uses 67-63-0, Isopropyl alcohol, uses 144-62-7, Oxalic acid, uses 7664-93-9, Sulfuric acid, uses 7697-37-2, Nitric acid, uses 27176-87-0, Dodecylbenzenesulfonic acid
RL: TEM (Technical or engineered material use); USES (Uses)
(noncorrosive rinsing soln. for alk. resist removal in semiconductor device manuf.) | | | | |
| IT | 37254-60-7
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(wiring; noncorrosive rinsing soln. for alk. resist removal in semiconductor device manuf.) | | | | |

L26 ANSWER 17 OF 18 CAPLUS COPYRIGHT 2002 ACS

AN 1994:233206 CAPLUS

DN 120:233206

TI Exposure of boundaries in epitaxial structures based on Al₁Si₁Bi₁V

*lacks
alcohol*

AU Vlasukova, L. A.
CS Beloruss. Gos. Univ., Minsk, Belarus
SO Neorg. Mater. (1993), 29(12), 1597-600
CODEN: NMATEI
DT Journal
LA Russian
CC 76-3 (Electric Phenomena)
Section cross-reference(s): 67, 75
AB Different **etchant** solns., were tested for revealing film boundaries in GaAs and InP epitaxial films. The optimum **etching** conditions were detd. The effect of film substrate conditions on the **etching** is described. A comparison was made between anodic oxidn. and selective **etching** and the results used to explain the formation of pn junctions during epitaxy.
ST **etching** gallium arsenide indium phosphide; film epitaxial boundary **etching**; anodic oxidn junction epitaxial film
IT **Semiconductor** junctions
(from epitaxy of gallium arsenide or indium phosphide)
IT **Etching**
(of films boundaries in Group IIIA pnictide epitaxial films)
IT Anodization
(of gallium arsenide and indium phosphide)
IT Epitaxy
(of gallium arsenide and indium phosphide, **etching** of interface boundaries after)
IT Polishing
(of substrates prior to epitaxy)
IT 107-21-1, Ethylene glycol, uses
RL: USES (Uses)
(**etchant** contg., for exposure of boundaries in gallium arsenide layers)
IT 87-69-4, Tartaric acid, uses 1310-58-3, Potassium hydroxide, uses 1333-82-0, Chromium oxide (CrO₃) 7664-38-2, Phosphoric acid, uses 7664-39-3, Hydrogen fluoride, uses 7664-93-9, Sulfuric acid, uses 7697-37-2, Nitric acid, uses 7761-88-8, Silver nitrate, uses 7778-50-9, Potassium dichromate 7783-28-0, Diammonium hydrogen phosphate 13746-66-2, Tripotassium hexacyanoferrate
RL: USES (Uses)
(**etchant**, for exposure of boundaries in gallium arsenide layers)
IT 1303-00-0, Gallium monoarsenide, miscellaneous 22398-80-7, Indium monophosphide, miscellaneous
RL: MSC (Miscellaneous)
(**etching** revelation of boundaries in epitaxial films of)

L26 ANSWER 18 OF 18 CAPLUS COPYRIGHT 2002 ACS
AN 1989:85075 CAPLUS
DN 110:85075
TI Fabrication of buried-heterostructure gallium arsenide **semiconductor** laser
IN Kunihara, Kenji
PA Fuji Electric Co., Ltd., Japan
SO Jpn. Kokai Tokkyo Koho, 7 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
IC ICM H01S003-18
ICA H01L021-306
CC 73-10 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
Section cross-reference(s): 76
FAN.CNT 1

PATENT NO.

KIND DATE

APPLICATION NO. DATE

PI JP 63222486 A2 19880916 JP 1987-55786 19870311

AB A process for making a buried-heterostructure **semiconductor** laser, suited for use as a light source in optical communication and information processing, comprises the steps of: forming a 1st cladding layer, an active layer, and a 2nd cladding layer thinner than the 1st cladding layer; photoetching the structure formed to create a mesa stripe; filling in the **etched** portions of the structure with a 3rd cladding layer extending up to the 2nd cladding layer; and forming a contact layer above the 2nd and 3rd cladding layers.

ST buried heterostructure **semiconductor** laser fabrication; aluminum gallium arsenide **semiconductor** laser

IT Lasers
 (aluminum gallium arsenide, buried heterostructure)

IT 1303-00-0, Gallium arsenide, uses and miscellaneous

RL: USES (Uses)
 (buried-heterostructure **semiconductor** laser)

IT 106495-81-2, Aluminum gallium arsenide (Al0.45Ga0.55As) 106604-41-5,
 Aluminum gallium arsenide (Al0.13Ga0.87As)
 RL: PRP (Properties)
 (buried-heterostructure **semiconductor** laser)

IT 107-21-1, Ethylene glycol, uses and miscellaneous
 7664-38-2, Phosphoric acid, uses and miscellaneous 7722-84-1,
 Hydrogen peroxide, uses and miscellaneous
 RL: USES (Uses)
 (etchant contg., for photoetching of buried-heterostructure
semiconductor laser)

=> d 127,1-38,all

date

L27 ANSWER 1 OF 38 CAPLUS COPYRIGHT 2002 ACS

AN 2002:332477 CAPLUS

DN 136:333919

TI Method and device for cleaning a **semiconductor** wafer by chemical-mechanical polishing

IN Bonsdorf, Grit; Dickenscheid, Wolfgang

PA Infineon Technologies Ag, Germany

SO PCT Int. Appl., 21 pp.
 CODEN: PIXXD2

DT Patent

LA German

IC ICM H01L021-321
 ICS H01L021-3105

CC 76-3 (Electric Phenomena)

FAN.CNT 1

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|-------|----------|------------------|----------|
| ----- | ----- | ----- | ----- | ----- |
| PI WO 2002035598 | A1 | 20020502 | WO 2001-EP11582 | 20011008 |
| W: JP, KR, US | | | | |
| RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR | | | | |
| DE 10052762 | A1 | 20020516 | DE 2000-10052762 | 20001025 |
| PRAI DE 2000-10052762 | A | 20001025 | | |
| AB The cleaning of a surface of a semiconductor wafer by means of a chem.-mech. polishing process with continuous rotation is achieved with an integrated continuous method, whereby the surface is 1st etched , then rinsed and finally dried. | | | | |
| ST semiconductor material cleaning chem mech polishing | | | | |
| IT Polishing
(app.; method and device for cleaning a semiconductor wafer by chem.-mech. polishing) | | | | |
| IT Polishing | | | | |

(chem.-mech.; method and device for cleaning a **semiconductor** wafer by chem.-mech. polishing)

IT Cleaning

Drying

Etching

Semiconductor materials

(method and device for cleaning a **semiconductor** wafer by chem.-mech. polishing)

IT Washing

(rinsing; method and device for cleaning a **semiconductor** wafer by chem.-mech. polishing)

IT 67-63-0, Isopropanol, processes

RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)

(drying agent; method and device for cleaning a **semiconductor** wafer by chem.-mech. polishing)

IT 7664-39-3, Hydrogen fluoride, processes 7664-93-9, Sulfuric acid, processes 7722-84-1, Hydrogen peroxide, processes

RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)

(etchant; method and device for cleaning a **semiconductor** wafer by chem.-mech. polishing)

RE.CNT 9 THERE ARE 9 CITED REFERENCES AVAILABLE FOR THIS RECORD

RE

(1) Ali, I; US 5996594 A 1999 CAPLUS

(2) Anon; PATENT ABSTRACTS OF JAPAN 1998, V1998(02)

(3) Canon Inc; JP 09270412 A 1997

(4) Hayakawa, H; US 5779520 A 1998

(5) Imec Inter Uni Micro Electr; EP 0905747 A 1999 CAPLUS

(6) Sez Semiconduct Equip Zubehoer; EP 0938133 A 1999 CAPLUS

(7) Sumnitsch, F; US 4903717 A 1990

(8) Ueno, K; US 5882433 A 1999

(9) Yamasaka, M; US 5997653 A 1999

L27 ANSWER 2 OF 38 CAPLUS COPYRIGHT 2002 ACS

AN 2002:217417 CAPLUS

DN 137:9993

TI Estimation of VOCs emission factor for **semiconductor** manufacturing processes

AU Chein, H.; Chen, M.-H.

CS Center for Environmental, Safety and Health Technology, Industrial Technology Research Institute, Taiwan

SO Advances in Air Pollution (2001), 10(Air Pollution IX), 491-500

CODEN: AAPOFM; ISSN: 1369-5886

PB WIT Press

DT Journal

LA English

CC 59-2 (Air Pollution and Industrial Hygiene)
Section cross-reference(s): 74, 76

AB The **semiconductor** manufg. industry contributed significantly to economic growth and became the most important industry in Taiwan; however, emission of hazardous air pollutants (HAP) produced by this industry is increasingly deteriorating ambient air quality. A great amt. of volatile org. compds. (VOC) can be produced and emitted with waste gases from **semiconductor** manufg. processes, e.g., cleaning, **etching**, and photolithog. This study estd. total VOC emissions from the **semiconductor** industry based on established emission factors, defined as the emission rate (kg/mo) divided by the amt. of chems. used (L/mo). The VOC emission rate was measured with a continuous emission monitor (CEM). The amt. of chems. used was adopted from data reported to the Department of Environmental Protection by **semiconductor** factories in accordance with regulations. A total of 9 typical **semiconductor** facilities were analyzed in a 6-mo period.

Preliminary results showed the VOC emission factor was 0.0481 .+- .0.0179 kg/L. A linear regression function was proposed to fit the data; results are presented and discussed.

ST estg volatile org emission **semiconductor** manufg waste gas Taiwan; air pollution volatile org emission **semiconductor** manufg Taiwan

IT Standards, legal and permissive (air quality; estg. volatile org. hazardous pollutant emission factors for air pollution by waste gas from **semiconductor** manufg. processes in Taiwan)

IT Air pollution
Electrophotographic developers
semiconductor materials (estg. volatile org. hazardous pollutant emission factors for air pollution by waste gas from **semiconductor** manufg. processes in Taiwan)

IT Volatile organic compounds
RL: OCU (Occurrence, unclassified); POL (Pollutant); OCCU (Occurrence) (estg. volatile org. hazardous pollutant emission factors for air pollution by waste gas from **semiconductor** manufg. processes in Taiwan)

IT Waste gases
(**semiconductor** manufg.; estg. volatile org. hazardous pollutant emission factors for air pollution by waste gas from **semiconductor** manufg. processes in Taiwan)

IT Photolithography
(solns. for; volatile org. compds. in; estg. volatile org. hazardous pollutant emission factors for air pollution by waste gas from **semiconductor** manufg. processes in Taiwan)

IT 67-63-0, Isopropyl alcohol, occurrence 67-64-1, Acetone, occurrence 107-21-1, 1,2-Ethanediol, occurrence 540-59-0, Ethene, 1,2-dichloro- 872-50-4, N-Methyl-2-pyrrolidinone, occurrence 1330-20-7, Xylene, occurrence 7647-01-0, Hydrochloric acid, occurrence 7664-39-3, Hydrofluoric acid, occurrence 7664-41-7, Ammonia, occurrence 7664-93-9, Sulfuric acid, occurrence 7697-37-2, Nitric acid, occurrence
RL: OCU (Occurrence, unclassified); POL (Pollutant); OCCU (Occurrence) (estg. volatile org. hazardous pollutant emission factors for air pollution by waste gas from **semiconductor** manufg. processes in Taiwan)

RE.CNT 6 THERE ARE 6 CITED REFERENCES AVAILABLE FOR THIS RECORD

RE

- (1) Anon; VLSI Manufacturing Technology 1995, P183
- (2) CTCI Corporation/Environmental Protection Agency; Handbook for Estimation of Taiwan Air Pollutant Emission-SCC Emission Factor Listing Table 1996
- (3) Department of Environmental Protection in Hsinchu County; The Project Report of Air Quality Improvement Project in Hsinchu Industry Parks 2000
- (4) Environmental Protection Agency; Air Pollution Regulation and Emission Standard for Semiconductor Manufacturing Industry 2000
- (5) Environmental Protection Agency; Handbook for Estimation of Taiwan Air Pollutant Emission 2000
- (6) Tsai, C; Chinese Association for Aerosol Research in Taiwan 2000, P3

L27 ANSWER 3 OF 38 CAPLUS COPYRIGHT 2002 ACS

AN 2002:107888 CAPLUS

DN 136:159923

TI Methods of polishing, interconnect fabrication, and producing **semiconductor** devices

IN Kondo, Seiichi; Sakuma, Noriyuki; Homma, Yoshio

PA Hitachi, Ltd., Japan

SO U.S. Pat. Appl. Publ., 25 pp.

CODEN: USXXCO

DT Patent

LA English
IC ICM H01L021-461
NCL 438691000
CC 76-3 (Electric Phenomena)
FAN.CNT 1

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------|---|------|----------|-----------------|----------|
| PI | US 2002016073 | A1 | 20020207 | US 2001-828919 | 20010410 |
| | JP 2002050595 | A2 | 20020215 | JP 2000-242750 | 20000804 |
| PRAI | JP 2000-242750 | A | 20000804 | | |
| AB | The present invention relates to polishing of a metal film, and in particular, to a method of polishing in an interconnect-fabrication process for producing semiconductor devices. The present invention provides a technique to reduce and suppress scratches and delamination, to suppress and control the development of dishing and erosion, and to polish at high polishing rate. Polishing is performed using a polishing soln., which contains an oxidizer, H3PO4, org. acid, a chem. to form inhibition layer, and H2O. | | | | |
| ST | semiconductor device fabrication interconnection etching
polishing | | | | |
| IT | Polishing
(chem.-mech.; methods of polishing, interconnect fabrication, and producing semiconductor devices) | | | | |
| IT | Corrosion inhibitors
Interconnections (electric)
semiconductor device fabrication
Sputtering
(methods of polishing, interconnect fabrication, and producing semiconductor devices) | | | | |
| IT | Carboxylic acids, processes
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)
(polishing soln. component; methods of polishing, interconnect fabrication, and producing semiconductor devices) | | | | |
| IT | 123-03-5, Cetylpyridinium chloride
RL: MOA (Modifier or additive use); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)
(anti-mildew, anti-bacterial etchant additive; methods of polishing, interconnect fabrication, and producing semiconductor devices) | | | | |
| IT | 7440-50-8, Copper, uses
RL: DEV (Device component use); USES (Uses)
(interconnection; methods of polishing, interconnect fabrication, and producing semiconductor devices) | | | | |
| IT | 12033-62-4, Tantalum nitride (TaN)
RL: DEV (Device component use); USES (Uses)
(methods of polishing, interconnect fabrication, and producing semiconductor devices) | | | | |
| IT | 7440-21-3, Silicon, processes 7440-25-7, Tantalum, processes
7440-33-7, Tungsten, processes 7631-86-9, Silicon oxide, processes
25583-20-4, Titanium nitride (TiN)
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PYP (Physical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(methods of polishing, interconnect fabrication, and producing semiconductor devices) | | | | |
| IT | 64-17-5, Ethanol, processes 67-56-1, Methanol, processes
67-63-0, Isopropyl alcohol, processes
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)
(methods of polishing, interconnect fabrication, and producing semiconductor devices) | | | | |
| IT | 50-21-5, .alpha.-Hydroxypropionic acid, processes 95-14-7, | | | | |

1H-Benzotriazole 95-14-7D, 1H-Benzotriazole, derivs. 288-32-4,
Imidazole, processes 2551-62-4, Sulfur hexafluoride 6303-21-5,
Hypophosphorous acid 7664-38-2, Orthophosphoric acid, processes
7722-84-1, Hydrogen peroxide, processes 9003-01-4D, Polyacrylic acid,
ammonium salt 10343-62-1, Metaphosphoric acid 31212-28-9,
Nitrobenzenesulfonic acid
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical
process); PYP (Physical process); PROC (Process); USES (Uses)
(polishing soln. component; methods of polishing, interconnect
fabrication, and producing **semiconductor** devices)

duke L27 ANSWER 4 OF 38 CAPLUS COPYRIGHT 2002 ACS
AN 2002:31862 CAPLUS
DN 136:94681
TI Method of forming a thin gate silicon oxynitride dielectric layers of 7
angstrom thickness
IN Keating, Steven J.; Chau, Robert S.; Arghavani, Reza; Kavalieros, Jack T.;
Barlage, Douglas W.
PA USA
SO U.S. Pat. Appl. Publ., 8 pp.
CODEN: USXXCO
DT Patent
LA English
IC ICM H01L029-76
ICS H01L029-94; H01L031-062; H01L031-113; H01L031-119; H01L023-58
NCL 257336000
CC 76-10 (Electric Phenomena)
Section cross-reference(s): 66
FAN.CNT 1

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|----|--|------|----------|-----------------|----------|
| | ----- | --- | ----- | ----- | ----- |
| PI | US 2002003258 | A1 | 20020110 | US 1998-208268 | 19981208 |
| AB | A method of forming a dielec. layer suitable for use as the gate dielec.
layer in a MOSFET includes passivating the surface of a
semiconductor substrate at a temp. .ltorsim.80.degree. and
nitridizing the passivation layer. In particular embodiments, passivating
a Si wafer includes forming a hydroxy-silicate layer at .apprx.24.degree..
In a further aspect of the present invention, an integrated circuit
includes a plurality of insulated gate field effect transistors, in which
various ones of the plurality of transistors have gate dielec. layers of
the nitridized passivation layer. | | | | |
| ST | gate ultra thin silicon oxynitride dielec layer nitriding passivation;
MOSFET IGFET silicon oxynitride dielec film | | | | |
| IT | Plasma
(N2 plasma nitridation; method of forming a thin gate silicon
oxynitride dielec. layers of 7 angstrom thickness by nitriding
passivated silicon surface) | | | | |
| IT | Field effect transistors
(insulated-gate; method of forming a thin gate silicon oxynitride
dielec. layers of 7 angstrom thickness by nitriding passivated silicon
surface) | | | | |
| IT | Dielectric films
Integrated circuits
MOSFET (transistors)
(method of forming a thin gate silicon oxynitride dielec. layers of 7
angstrom thickness by nitriding passivated silicon surface) | | | | |
| IT | Rapid thermal annealing
(nitridation; method of forming a thin gate silicon oxynitride dielec.
layers of 7 angstrom thickness by nitriding passivated silicon surface) | | | | |
| IT | Neutralization
(of Si wafer surface by passivation; method of forming a thin gate
silicon oxynitride dielec. layers of 7 angstrom thickness by nitriding
passivated silicon surface) | | | | |

IT **Etching**
 (sacrificial layer removal; method of forming a thin gate silicon oxynitride dielec. layers of 7 angstrom thickness by nitriding passivated silicon surface)

IT **Passivation**
 (silicon surface by hydroxy-silicate layer formation; method of forming a thin gate silicon oxynitride dielec. layers of 7 angstrom thickness by nitriding passivated silicon surface)

IT 7647-01-0, Hydrogen chloride, processes
 RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); RCT (Reactant); PROC (Process); RACT (Reactant or reagent)
 (H₂O/H₂O₂/HCl passivation of Si wafer; method of forming a thin gate silicon oxynitride dielec. layers of 7 angstrom thickness by nitriding passivated silicon surface)

IT 1336-21-6, Ammonium hydroxide 7722-84-1, Hydrogen peroxide, processes
 RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); RCT (Reactant); PROC (Process); RACT (Reactant or reagent)
 (H₂O/H₂O₂/NH₄OH passivation of Si wafer; method of forming a thin gate silicon oxynitride dielec. layers of 7 angstrom thickness by nitriding passivated silicon surface)

IT 7782-44-7, Oxygen, processes 7782-50-5, Chlorine, processes
 RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); RCT (Reactant); PROC (Process); RACT (Reactant or reagent)
 (O₂/Cl₂ oxidn. to form sacrificial layer on Si wafer; method of forming a thin gate silicon oxynitride dielec. layers of 7 angstrom thickness by nitriding passivated silicon surface)

IT 11105-01-4, Silicon oxynitride
 RL: CPS (Chemical process); DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
 (formation by nitriding hydroxy-silicate layer; method of forming a thin gate silicon oxynitride dielec. layers of 7 angstrom thickness by nitriding passivated silicon surface)

IT 12627-13-3, Silicate
 RL: CPS (Chemical process); DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
 (hydroxy-, passivation layer on Si wafer; method of forming a thin gate silicon oxynitride dielec. layers of 7 angstrom thickness by nitriding passivated silicon surface)

IT 12033-89-5, Silicon nitride, uses
 RL: DEV (Device component use); USES (Uses)
 (in for side wall spacers; method of forming a thin gate silicon oxynitride dielec. layers of 7 angstrom thickness by nitriding passivated silicon surface)

IT 10028-15-6, Ozone, processes
 RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); RCT (Reactant); PROC (Process); RACT (Reactant or reagent)
 (ozonated water, passivation Si wafer surface; method of forming a thin gate silicon oxynitride dielec. layers of 7 angstrom thickness by nitriding passivated silicon surface)

IT **7664-38-2, Phosphoric acid, processes 7664-93-9,**
Sulfuric acid, processes 7697-37-2, Nitric acid, processes
 RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); RCT (Reactant); PROC (Process); RACT (Reactant or reagent)
 (passivation Si wafer surface; method of forming a thin gate silicon oxynitride dielec. layers of 7 angstrom thickness by nitriding passivated silicon surface)

IT 7727-37-9, Nitrogen, processes
 RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); RCT (Reactant); PROC (Process); RACT (Reactant or reagent)
 (plasma nitridation; method of forming a thin gate silicon oxynitride dielec. layers of 7 angstrom thickness by nitriding passivated silicon surface)

IT 7440-21-3, Silicon, processes

RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(polycryst. gate electrode, substrate; method of forming a thin gate silicon oxynitride dielec. layers of 7 angstrom thickness by nitriding passivated silicon surface)

IT 7664-41-7, Ammonia, processes
RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); RCT (Reactant); PROC (Process); RACT (Reactant or reagent)
(rapid thermal nitridation; method of forming a thin gate silicon oxynitride dielec. layers of 7 angstrom thickness by nitriding passivated silicon surface)

IT 67-63-0, Isopropyl alcohol, processes
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)
(vapor jet drying passivated Si wafer; method of forming a thin gate silicon oxynitride dielec. layers of 7 angstrom thickness by nitriding passivated silicon surface)

IT 7664-39-3, Hydrogen fluoride, processes 7732-18-5, Water, processes
RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); RCT (Reactant); PROC (Process); RACT (Reactant or reagent)
(water/HF **etching** for sacrificial oxide layer removal; method of forming a thin gate silicon oxynitride dielec. layers of 7 angstrom thickness by nitriding passivated silicon surface)

L27 ANSWER 5 OF 38 CAPLUS COPYRIGHT 2002 ACS

AN 2002:10842 CAPLUS
DN 136:91435

date TI Method to restore hydrophobicity in dielectric films and materials
IN Hacker, Nigel P.; Thomas, Michael; Drage, James S.

PA Honeywell International, Inc., USA
SO PCT Int. Appl., 34 pp.

CODEN: PIXXD2

DT Patent

LA English

IC ICM H01L021-316

CC 66-6 (Surface Chemistry and Colloids)
Section cross-reference(s): 76

FAN.CNT 1

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|----|---------------|--|----------|-----------------|----------|
| PI | WO 2002001621 | A2 | 20020103 | WO 2001-US19466 | 20010619 |
| | WO 2002001621 | A3 | 20020321 | | |
| | W: | AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM | | | |
| | RW: | GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG | | | |

PRAI US 2000-214219P P 20000623

AB SiO₂ dielec. films, whether nonporous foamed SiO₂ dielecs. or nonporous SiO₂ dielecs. are readily damaged by fabrication methods and reagents that reduce or remove hydrophobic properties from the dielec. surface. The invention provides for methods of imparting hydrophobic properties to such damaged SiO₂ dielec. films present on a substrate. The invention also provides plasma-based methods for imparting hydrophobicity to both new and damaged SiO₂ dielec. films. **Semiconductor** devices prep'd. by the inventive processes are also provided.

ST restore hydrophobicity silica dielec film surface modification

IT Alcohols, processes

RL: PEP (Physical, engineering or chemical process); RCT (Reactant); PROC

(Process); RACT (Reactant or reagent)
(amino, **etchant**; method to restore hydrophobicity in dielec.
films and materials)

IT Polishing
(chem.-mech.; method to restore hydrophobicity in dielec. films and
materials)

IT Sputtering
(copper; method to restore hydrophobicity in dielec. films and
materials)

IT Acids, processes
Alcohols, processes
Amides, processes
Amines, processes
Bases, processes
RL: PEP (Physical, engineering or chemical process); RCT (Reactant); PROC
(Process); RACT (Reactant or reagent)
(**etchant**; method to restore hydrophobicity in dielec. films
and materials)

IT Silsesquioxanes
RL: PEP (Physical, engineering or chemical process); PROC (Process)
(film; method to restore hydrophobicity in dielec. films and materials)

IT Dielectric films
Semiconductor device fabrication
(method to restore hydrophobicity in dielec. films and materials)

IT Ashing
(oxygen; method to restore hydrophobicity in dielec. films and
materials)

IT Vapor deposition process
(plasma, silicon nitride; method to restore hydrophobicity in dielec.
films and materials)

IT Plasma
(surface treatment; method to restore hydrophobicity in dielec. films
and materials)

IT Amines, processes
RL: PEP (Physical, engineering or chemical process); RCT (Reactant); PROC
(Process); RACT (Reactant or reagent)
(triamines, **etchant**; method to restore hydrophobicity in
dielec. films and materials)

IT 12033-89-5, Silicon nitride, processes
RL: PEP (Physical, engineering or chemical process); PROC (Process)
(PECVD; method to restore hydrophobicity in dielec. films and
materials)

IT 7440-25-7, Tantalum, processes
RL: PEP (Physical, engineering or chemical process); PROC (Process)
(barrier liner film; method to restore hydrophobicity in dielec. films
and materials)

IT 7440-50-8, Copper, processes
RL: PEP (Physical, engineering or chemical process); PROC (Process)
(copper seed layer; method to restore hydrophobicity in dielec. films
and materials)

IT 60-00-4, processes **64-17-5**, Ethanol, processes 64-18-6, Formic
acid, processes 64-19-7, Acetic acid, processes **67-63-0**,
2-Propanol, processes 68-12-2, Dimethylformamide, processes 75-59-2,
Tetramethylammonium hydroxide 100-36-7, N,N-Diethylethylenediamine
107-15-3, Ethylenediamine, processes 111-40-0, Diethylenetriamine
121-44-8, Triethylamine, processes 127-19-5, Dimethylacetamide
141-43-5, Ethanolamine, processes 872-50-4, processes 1336-21-6,
Ammonium hydroxide **7664-38-2**, Phosphoric acid, processes
7664-39-3, Hydrofluoric acid, processes **7664-93-9**, Sulfuric
acid, processes 7803-49-8, Hydroxyl amine, processes 10581-12-1,
Tetramethylammonium acetate 12125-01-8, Ammonium fluoride 14475-38-8,
Silanol
RL: PEP (Physical, engineering or chemical process); RCT (Reactant); PROC

(Process); RACT (Reactant or reagent)
(etchant; method to restore hydrophobicity in dielec. films
and materials)

IT 7697-37-2, Nitric acid, processes
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical
process); PROC (Process); USES (Uses)
(in silica precursor; method to restore hydrophobicity in dielec. films
and materials)

IT 174794-67-3, Amberjet 4200
RL: CAT (Catalyst use); USES (Uses)
(method to restore hydrophobicity in dielec. films and materials)

IT 385809-99-4, EKC 630
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical
process); PROC (Process); USES (Uses)
(method to restore hydrophobicity in dielec. films and materials)

IT 7631-86-9, Silica, processes
RL: DEV (Device component use); PEP (Physical, engineering or chemical
process); PROC (Process); USES (Uses)
(nanoporous film; method to restore hydrophobicity in dielec. films and
materials)

IT 75-79-6, Methyltrichlorosilane 10025-78-2, Trichlorosilane
RL: PEP (Physical, engineering or chemical process); RCT (Reactant); PROC
(Process); RACT (Reactant or reagent)
(nanoporous silica film precursor; method to restore hydrophobicity in
dielec. films and materials)

IT 74-82-8, Methane, processes 1333-74-0, Hydrogen, processes 7727-37-9,
Nitrogen, processes 7782-41-4, Fluorine, processes 7782-44-7, Oxygen,
processes
RL: PEP (Physical, engineering or chemical process); RCT (Reactant); PROC
(Process); RACT (Reactant or reagent)
(plasma treatment of silica film; method to restore hydrophobicity in
dielec. films and materials)

IT 7440-37-1, Argon, processes
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical
process); PROC (Process); USES (Uses)
(silane plasma; method to restore hydrophobicity in dielec. films and
materials)

IT 992-94-9, Methylsilane
RL: PEP (Physical, engineering or chemical process); RCT (Reactant); PROC
(Process); RACT (Reactant or reagent)
(silane plasma; method to restore hydrophobicity in dielec. films and
materials)

IT 78-10-4, Tetraethoxysilane
RL: PEP (Physical, engineering or chemical process); RCT (Reactant); PROC
(Process); RACT (Reactant or reagent)
(silica precursor; method to restore hydrophobicity in dielec. films
and materials)

IT 96-22-0, 3-Pentanone
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical
process); PROC (Process); USES (Uses)
(solvent for surface modifier; method to restore hydrophobicity in
dielec. films and materials)

IT 112-35-6, Triethyleneglycol monomethyl ether
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical
process); PROC (Process); USES (Uses)
(solvent in silica precursor; method to restore hydrophobicity in
dielec. films and materials)

IT 110-43-0, 2-Heptanone
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical
process); PROC (Process); USES (Uses)
(surface modifier solvent; method to restore hydrophobicity in dielec.
films and materials)

IT 4253-34-3, Methyltriacetoxysilane

RL: MOA (Modifier or additive use); PEP (Physical, engineering or chemical process); RCT (Reactant); PROC (Process); RACT (Reactant or reagent); USES (Uses)

(surface modifier; method to restore hydrophobicity in dielec. films and materials)

IT 75-77-4, Trimethylchlorosilane, processes 75-78-5,
Dimethyldichlorosilane 78-62-6, Dimethyldiethoxysilane 107-46-0,
Hexamethyldisiloxane 597-52-4, Triethylsilanol 791-31-1,
Triphenylsilanol 947-42-2, Diphenylsilanediol 993-07-7,
Trimethylsilane 998-30-1, Triethoxysilane 999-97-3,
Hexamethyldisilazane 1066-40-6, Trimethylsilanol 1111-74-6,
Dimethylsilane 1112-39-6, Dimethyldimethoxysilane 1185-55-3,
Methyltrimethoxysilane 1825-61-2, Trimethylmethoxysilane 1825-62-3,
Trimethylethoxysilane 2031-67-6, Methyltriethoxysilane 2182-66-3,
Diacetoxydimethylsilane 2345-38-2 2487-90-3, Trimethoxysilane
2754-27-0, Acetoxytrimethylsilane 5683-31-8D, 2-Propynoic acid,
3-(trimethylsilyl)-, ester derivs. 13257-81-3 13435-12-6,
n-(Trimethylsilyl)acetamide 18042-54-1, Phenyltriacetoxy silane
18156-74-6, n-(Trimethylsilyl)imidazole 18173-64-3, tert-
Butyldimethylsilanol 33581-77-0 57915-58-9, Nonamethyltrisilazane
RL: PEP (Physical, engineering or chemical process); RCT (Reactant); PROC
(Process); RACT (Reactant or reagent)
(surface modifier; method to restore hydrophobicity in dielec. films and materials)

L27 ANSWER 6 OF 38 CAPLUS COPYRIGHT 2002 ACS

AN 2001:650652 CAPLUS

DN 135:219187

TI TEM sample preparation technique for semiconductors using photochemical **etching**

AU Tanaka, Shigeyasu

CS Graduate School of Engineering, Nagoya University, Furo-cho, Chigusa-ku, Nagoya, 464-8603, Japan

SO Denshi Kenbikyo (2001), 36(2), 135-137

CODEN: DKENDV; ISSN: 0417-0326

PB Nippon Denshi Kenbikyo Gakkai

DT Journal

LA Japanese

CC 76-2 (Electric Phenomena)

AB TEM samples of GaAs and a heterostructure of Ga0.42In0.58As0.9P0.1/InP were prep'd. by lase photochem. **etching** by studying **etching** rates.

ST TEM sample prepn **semiconductor** photochem **etching**

IT **Etching** kinetics

Sample preparation

Semiconductor materials

 Transmission electron microscopy

 (TEM sample prepn. technique for semiconductors using photochem. **etching**)

IT **Etching**

 (photochem.; TEM sample prepn. technique for semiconductors using photochem. **etching**)

IT 64-17-5, Ethanol, uses 7664-93-9, Sulfuric acid, uses

7722-84-1, Hydrogen peroxide, uses 7726-95-6, Bromine, uses

RL: NUU (Other use, unclassified); USES (Uses)

 (TEM sample prepn. technique for semiconductors using photochem. **etching**)

IT 1303-00-0, Gallium arsenide, processes 22398-80-7, Indium phosphide, processes 109117-66-0, Gallium indium arsenide phosphide

 (Ga0.42In0.58As0.9P0.1)

RL: PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)

 (TEM sample prepn. technique for semiconductors using photochem.

etching)

X L27 ANSWER 7 OF 38 CAPLUS COPYRIGHT 2002 ACS
AN 2001:221959 CAPLUS
DN 134:230725
~~date~~ TI Method for fabricating capacitor of **semiconductor** device
IN Lee, Kee-Jeung
PA Hyundai Electronics Industries Co., Ltd., S. Korea
SO U.S., 9 pp.
CODEN: USXXAM
DT Patent
LA English
IC ICM H01L021-20
NCL 438398000
CC 76-3 (Electric Phenomena)
FAN.CNT 1

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------|---------------|-------|----------|-----------------|----------|
| | ----- | ----- | ----- | ----- | ----- |
| PI | US 6207528 | B1 | 20010327 | US 1999-475678 | 19991230 |
| PRAI | KR 1998-63681 | A | 19981231 | | |

AB The invention relates to a method for fabricating a capacitor of a **semiconductor** device with greater capacitance by adding an Al contg. compd. in the process of depositing an amorphous Ta205 layer in a LPCVD chamber, differently from the conventional method, thereby obtaining Ta205--Al2O3 for forming a dielec. layer with higher structural stability and dielec. const. than the Ta205 layer.

ST **semiconductor** device fabrication capacitor

IT Vapor deposition process
(chem., low-pressure; method for fabricating capacitor of **semiconductor** device)

IT Capacitor electrodes

Capacitors

Controlled atmospheres

Dielectric films

Nitriding

Rapid thermal annealing

semiconductor device fabrication

Sputtering
(method for fabricating capacitor of **semiconductor** device)

IT 7782-44-7, Oxygen, processes 10024-97-2, Nitrous oxide, processes
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(annealing ambient; method for fabricating capacitor of **semiconductor** device)

IT 7439-88-5, Iridium, uses 7440-06-4, Platinum, uses 7440-18-8, Ruthenium, uses 7440-33-7, Tungsten, uses 12030-49-8, Iridium oxide (IrO2) 12033-62-4, Tantalum nitride (TaN) 12036-10-1, Ruthenium oxide (RuO2) 12058-38-7, Tungsten nitride (WN) 12627-41-7, Tungsten silicide 25583-20-4, Titanium nitride (TiN)
RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
(device electrode material; method for fabricating capacitor of **semiconductor** device)

IT 1336-21-6, Ammonium hydroxide 7664-39-3, Hydrogen fluoride, processes 7664-93-9, Sulfuric acid, processes
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(etchant; method for fabricating capacitor of **semiconductor** device)

IT 1314-61-0, Tantalum oxide (Ta205) 1344-28-1, Alumina, uses
RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
(method for fabricating capacitor of **semiconductor** device)

IT 7664-41-7, Ammonia, processes 7727-37-9, Nitrogen, processes
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical
process); PROC (Process); USES (Uses)
(nitriding agent; method for fabricating capacitor of
semiconductor device)

IT 7440-21-3, Silicon, uses
RL: DEV (Device component use); TEM (Technical or engineered material
use); USES (Uses)
(polycryst.; method for fabricating capacitor of **semiconductor**
device)

IT 64-17-5, Ethanol, processes 35296-72-1, Butanol
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical
process); PROC (Process); USES (Uses)
(vapor deposition precursor solvent; method for fabricating capacitor
of **semiconductor** device)

IT 555-75-9, Aluminum ethoxide 6074-84-6, Tantalum ethoxide 21645-51-2,
Aluminum hydroxide, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(vapor deposition precursor; method for fabricating capacitor of
semiconductor device)

RE.CNT 12 THERE ARE 12 CITED REFERENCES AVAILABLE FOR THIS RECORD

RE

- (1) Ahn; US 5134086 1992
- (2) Banerjee; IEEE Transactions on Electron Devices 2000, V47, P584 CAPLUS
- (3) Fazan; IEDM Technical Digest 1992, P263
- (4) Ha; IEEE Transactions on Electron Devices 2000, V47, P1499 CAPLUS
- (5) Kamiyama; US 5486488 1996
- (6) Kamiyama; IEDM Technical Digest 1993, P49
- (7) Lee; US 5741734 1998
- (8) Lim; International Conference on VLSI and CAD 1999, P506
- (9) Matsudaira; US 4670355 1987 CAPLUS
- (10) Muenz; US 3949275 1976 CAPLUS
- (11) Tang; IEEE Circuits and Devices Magazine 1997, V13, P27
- (12) Won; US 6136641 2000 CAPLUS

X L27 ANSWER 8 OF 38 CAPLUS COPYRIGHT 2002 ACS

AN 2001:145246 CAPLUS

DN 134:171970

TI Low temperature rinse of **etching** agents in device fabrication

date FN Gilton, Terry L.

PA Micron Technology, Inc., USA

SO U.S., 10 pp.

CODEN: USXXAM

DT Patent

LA English

IC ICM H01L021-3063

NCL 438745000

CC 76-3 (Electric Phenomena)

FAN.CNT 1

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE | |
|----|--|------|----------|-----------------|----------|--|
| | ----- | --- | ----- | ----- | ----- | |
| PI | US 6194326 | B1 | 20010227 | US 2000-544721 | 20000406 | |
| AB | A wafer cleaning process is disclosed for quenching etch
reactions while rinsing etch reactants and etch
products from the wafer. Holes are etched through an insulating
layer by reactive ion etch , for example. The holes might
comprise contact openings over a semiconductor substrate, or
vias through insulating layers between metal lines. An org. or polymer
residue left in the holes is cleaned by a wet process. The cleaning
process continues to attack sidewalls of the holes, undesirably widening
them. The wafer is therefore rinsed with a rinse agent <0.degree.,
thermally quenching further etching of the sidewalls and
affording greater control over the hole dimensions. At the same time, the | | | | | |

rinse agent allows relatively rapid diffusion of **etchants** and **etch** products from narrow and deep openings. An exemplary rinse agent for such low temp. rinsing is dil. ethylene glycol.

ST rinsing **etchant** device fabrication

IT **Etching**
(**etchants**; low temp. rinse of **etching** agents in device fabrication)

IT Sputtering
(**etching**, reactive, agents; low temp. rinse of **etching** agents in device fabrication)

IT Alcohols, processes
Amines, processes
Glycols, processes
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(in low temp. rinse of **etching** agents in device fabrication)

IT Contact holes
Semiconductor device fabrication

IT Washing
(low temp. rinse of **etching** agents in device fabrication)

IT **Etching**
(sputter, reactive, agents; low temp. rinse of **etching** agents in device fabrication)

IT Interconnections (electric)
(vias; low temp. rinse of **etching** agents in device fabrication)

IT **67-63-0**, Isopropanol, uses
RL: NUU (Other use, unclassified); USES (Uses)
(drying agent; low temp. rinse of **etching** agents in device fabrication)

IT **7664-38-2**, Phosphoric acid, uses
RL: NUU (Other use, unclassified); USES (Uses)
(**etchant**; low temp. rinse of **etching** agents in device fabrication)

IT 57-55-6, Propylene glycol, processes 107-21-1, Ethylene glycol, processes 7732-18-5, Water, processes
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(in low temp. rinse of **etching** agents in device fabrication)

IT 7664-41-7, Ammonia, processes
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(liq.; in low temp. rinse of **etching** agents in device fabrication)

RE.CNT 5 THERE ARE 5 CITED REFERENCES AVAILABLE FOR THIS RECORD

RE

(1) Aoyama; US 5630904 1997 CAPLUS
(2) Li; US 6012469 2000 CAPLUS
(3) Mautz; US 5476816 1995 CAPLUS
(4) Ng; US 5946589 1999 CAPLUS
(5) Sugihara; US 5705089 1998 CAPLUS

L27 ANSWER 9 OF 38 CAPLUS COPYRIGHT 2002 ACS
X AN 2001:91552 CAPLUS
DN 134:134107
TI Photovoltaic device
IN Matsuyama, Jinsho; Matsuda, Koichi
PA Canon Kabushiki Kaisha, Japan
SO U.S., 102 pp.
CODEN: USXXAM
DT Patent
LA English
IC ICM H01L031-00

NCL 136256000

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

Section cross-reference(s): 76

FAN.CNT 2

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------|---|------|----------|-----------------|----------|
| PI | US 6184456 | B1 | 20010206 | US 1997-985312 | 19971204 |
| | JP 10173216 | A2 | 19980626 | JP 1996-342725 | 19961206 |
| | JP 10173211 | A2 | 19980626 | JP 1996-342726 | 19961206 |
| | JP 10200146 | A2 | 19980731 | JP 1997-13364 | 19970108 |
| | JP 10200147 | A2 | 19980731 | JP 1997-13365 | 19970108 |
| PRAI | JP 1996-342725 | A | 19961206 | | |
| | JP 1996-342726 | A | 19961206 | | |
| | JP 1997-13364 | A | 19970108 | | |
| | JP 1997-13365 | A | 19970108 | | |
| AB | A photovoltaic device of the present invention has a non-single-crystal semiconductor . A layer underlying the non-single-crystal semiconductor has a polycryst. structure. Individual grains of the polycrystal exposed in the surface of the underlying layer have smooth surfaces. The surface of the underlying layer has a step along the grain boundaries of the polycrystal, or a protrusion or recess at the grain boundaries. Alternatively, polycrystal grains having rough surfaces and polycrystal grains having smooth surfaces commonly exist in the surface of the polycryst. layer. The polycryst. layer may be a substrate of the photovoltaic device. The present invention, by virtue of the use of such a polycryst. layer, provides a highly reliable and efficient thin-film photovoltaic device which enhances light absorption by the semiconductor layer and which can be produced at a high yield even at a practically adaptable low cost, while eliminating deficiencies of known arts in regard to workability, yield and durability. | | | | |
| ST | solar photovoltaic device | | | | |
| IT | Etching
(acid; photovoltaic device with polycryst. semiconductor) | | | | |
| IT | Photodiodes
Semiconductor materials | | | | |
| | Solar cells | | | | |
| | Sputtering | | | | |
| | Ultrasonic cleaning
(photovoltaic device with polycryst. semiconductor) | | | | |
| IT | Microwave
(plasma CVD; photovoltaic device with polycryst. semiconductor) | | | | |
| IT | Vapor deposition process
(plasma, microwave; photovoltaic device with polycryst. semiconductor) | | | | |
| IT | Vapor deposition process
(plasma, radio-frequency; photovoltaic device with polycryst. semiconductor) | | | | |
| IT | Magnetron sputtering
(radio-frequency; photovoltaic device with polycryst. semiconductor) | | | | |
| IT | 7429-90-5, Aluminum, uses 7439-95-4, Magnesium, uses 7440-22-4, Silver, uses 7440-50-8, Copper, uses 7440-57-5, Gold, uses RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
(back-side reflection layer; photovoltaic device with polycryst. semiconductor) | | | | |
| IT | 64-19-7, Acetic acid, uses 7647-01-0, Hydrochloric acid, uses 7664-38-2, Phosphoric acid, uses 7664-39-3, Hydrofluoric acid, uses 7697-37-2, Nitric acid, uses RL: TEM (Technical or engineered material use); USES (Uses)
(etchant contg.; photovoltaic device with polycryst. semiconductor) | | | | |

IT 11148-21-3
RL: DEV (Device component use); USES (Uses)
(photovoltaic device with polycryst. **semiconductor**)
IT 11109-50-5, SUS 304 12597-68-1, Stainless steel, uses 321912-48-5, JIS
SUS 430-2D
RL: DEV (Device component use); PEP (Physical, engineering or chemical
process); TEM (Technical or engineered material use); PROC (Process); USES
(Uses)
(photovoltaic device with polycryst. **semiconductor**)
IT 1314-13-2P, Zinc oxide, uses 7440-21-3P, Silicon, uses
RL: DEV (Device component use); SPN (Synthetic preparation); PREP
(Preparation); USES (Uses)
(photovoltaic device with polycryst. **semiconductor**)
IT 321912-46-3, JIS SUS 430-2B
RL: DEV (Device component use); TEM (Technical or engineered material
use); USES (Uses)
(photovoltaic device with polycryst. **semiconductor**)
IT 11099-22-2
RL: FMU (Formation, unclassified); FORM (Formation, nonpreparative)
(photovoltaic device with polycryst. **semiconductor**)
IT 7637-07-2, Boron trifluoride, uses
RL: MOA (Modifier or additive use); USES (Uses)
(photovoltaic device with polycryst. **semiconductor**)
IT 7803-51-2, Phosphine
RL: MOA (Modifier or additive use); RCT (Reactant); RACT (Reactant or
reagent); USES (Uses)
(photovoltaic device with polycryst. **semiconductor**)
IT 1590-87-0, Disilane 7803-62-5, Silane, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(photovoltaic device with polycryst. **semiconductor**)
IT 67-63-0, Isopropanol, uses 67-64-1, Acetone, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(photovoltaic device with polycryst. **semiconductor**)
IT 11099-19-7
RL: DEV (Device component use); USES (Uses)
(reflection layer; photovoltaic device with polycryst.
semiconductor)
IT 128511-05-7, SUS430BA
RL: TEM (Technical or engineered material use); USES (Uses)
(substrate; photovoltaic device with polycryst. **semiconductor**)
)
IT 1312-43-2, Indium oxide in2o3
RL: DEV (Device component use); USES (Uses)
(transparent electrode; photovoltaic device with polycryst.
semiconductor)
IT 50926-11-9, Ito
RL: DEV (Device component use); USES (Uses)
(transparent electrodes; photovoltaic device with polycryst.
semiconductor)

RE.CNT 11 THERE ARE 11 CITED REFERENCES AVAILABLE FOR THIS RECORD

RE

- (1) Anon; JP 6084888 1985
- (2) Arao; US 5244509 1993 CAPLUS
- (3) Borden; Conference Record, 16th IEEE Photovoltaic Specialists Conf 1982
- (4) Deckman; 16th IEEE Photov Spec Conf 1982, P1425 CAPLUS
- (5) Gonzalez; US 4431858 1984 CAPLUS
- (6) Hamakawa; Appl Phys Lett 1983, V43(7), P644 CAPLUS
- (7) Harata; US 5498904 1996 CAPLUS
- (8) Iwasaki; US 5668050 1997 CAPLUS
- (9) Nakagawa; US 5486238 1996 CAPLUS
- (10) Saito; US 5284525 1994 CAPLUS
- (11) Tiedje; 16th IEEE Photov Spec Conf 1982, P1423 CAPLUS

X L27 ANSWER 10 OF 38 CAPLUS COPYRIGHT 2002 ACS
 AN 2001:64307 CAPLUS
 DN 134:124734
 date TI Compositions and processes for spin **etch** planarization in
semiconductor device fabrication
 IN Levert, Joseph; Towery, Daniel L.
 PA Alliedsignal Inc., USA
 SO PCT Int. Appl., 38 pp.
 CODEN: PIXXD2
 DT Patent
 LA English
 IC ICM H01L021-321
 ICS C23F003-06
 CC 76-3 (Electric Phenomena)
 FAN.CNT 1

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------|--|------|----------|-----------------|----------|
| PI | WO 2001006555 | A1 | 20010125 | WO 2000-US18723 | 20000710 |
| | W: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE,
DK, EE, ES, FI, GB, GE, GH, GM, HU, ID, IL, IN, IS, JP, KE, KG,
KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX,
NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT,
UA, UG, UZ, VN, YU, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY,
DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ,
CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG | | | | |
| | US 2001054706 | A1 | 20011227 | US 1999-356487 | 19990719 |
| | EP 1198827 | A1 | 20020424 | EP 2000-947151 | 20000710 |
| | R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, NL, SE, MC, PT,
IE, SI, LT, LV, FI, RO, MK, CY, AL | | | | |
| PRAI | US 1999-356487 | A | 19990719 | | |
| | WO 2000-US18723 | W | 20000710 | | |
| AB | The present invention describes methods and chem. compns. for the spin etch planarization of surfaces, particularly Cu and Ta. An etching soln. is brought into contact with the upper face of a spinning wafer through a nozzle, preferably an oscillating nozzle. The etching soln. has a compn. that oxidizes the spinning surface, forming a passivation layer thereon. The etching soln. further contains reactants for removing the passivation layer exposing the underlying surface to further reaction, leading to the desired etching of the surface. The characteristics of the etching soln. are adjusted such that reactant diffusion to lower regions of the surface limits the rate of etching . Faster reaction occurs at higher regions of the surface lying in more rapidly moving etching soln. resulting in the desired planarization. | | | | |
| ST | spin etching polishing semiconductor device
fabrication; chem mech polishing device fabrication; oxidn etching
device fabrication | | | | |
| IT | Alcohols, processes
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(aliph.; in compns. and processes for spin etch planarization
in semiconductor device fabrication) | | | | |
| IT | Surfactants
(anionic; in compns. and processes for spin etch
planarization in semiconductor device fabrication) | | | | |
| IT | Surfactants
(cationic; in compns. and processes for spin etch
planarization in semiconductor device fabrication) | | | | |
| IT | Polishing
(chem.-mech.; compns. and processes for spin etch
planarization in semiconductor device fabrication) | | | | |
| IT | Etching | | | | |

Integrated circuits
 Semiconductor device fabrication
 (compns. and processes for spin **etch** planarization in
 semiconductor device fabrication)

IT Hydrocarbons, processes
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
 (fluoro; in compns. and processes for spin **etch** planarization
 in **semiconductor** device fabrication)

IT Nozzles
 (for spin **etch** planarization in **semiconductor**
 device fabrication)

IT Oxidizing agents
Wetting agents
 (in compns. and processes for spin **etch** planarization in
 semiconductor device fabrication)

IT Amines, processes
Carboxylic acids, processes
Gelatins, processes
Phenols, processes
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
 (in compns. and processes for spin **etch** planarization in
 semiconductor device fabrication)

IT Passivation
 (in spin **etch** planarization in **semiconductor** device
 fabrication)

IT Surfactants
 (nonionic; in compns. and processes for spin **etch**
 planarization in **semiconductor** device fabrication)

IT Surfactants
 (org.; in compns. and processes for spin **etch** planarization
 in **semiconductor** device fabrication)

IT **Etching**
 (photochem.; for planarization in **semiconductor** device
 fabrication)

IT Oxidation
 (surface; in spin **etch** planarization in **semiconductor**
 device fabrication)

IT 7440-25-7, Tantalum, processes 7440-50-8, Copper, processes
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
 (compns. and processes for spin **etch** planarization of)

IT 57-55-6, Propyleneglycol, processes 60-00-4, EDTA, processes 62-76-0,
Sodium oxalate **64-17-5**, Ethanol, processes 64-19-7, Acetic
acid, processes 67-56-1, Methanol, processes 68-04-2, Trisodium
citrate **71-23-8**, n-Propanol, processes 75-89-8 77-92-9,
Citric acid, processes 87-69-4, Tartaric acid, processes 88-27-7,
2,6-Di-tert-butyl-4-[(dimethylamino)methyl]phenol 89-65-6, Erythorbic
acid 95-14-7, 1H-Benzotriazole 102-71-6, Triethanolamine, processes
104-75-6, 2-Ethylhexylamine 107-21-1, 1,2-Ethanediol, processes
128-37-0, Agidol, processes 139-33-3 144-62-7, Oxalic acid, processes
288-36-8, 1,2,3-Triazole 288-88-0, 1H-1,2,4-Triazole 288-94-8,
1H-Tetrazole 1303-96-4, Borax 1310-73-2, Sodium hydroxide, processes
1333-39-7, Phenolsulfonic acid 1336-21-6, Ammonium hydroxide
6915-15-7, Malic acid 7439-98-7D, Molybdenum, salts, processes
7440-25-7D, Tantalum, salts, processes 7440-50-8D, Copper, salts,
processes 7447-40-7, Potassium chloride, processes 7631-95-0, Sodium
molybdate 7631-99-4, Sodium nitrate, processes 7647-01-0, Hydrogen
chloride, processes **7664-38-2**, Phosphoric acid, processes
7664-39-3, Hydrogen fluoride, processes **7664-93-9**, Sulfuric
acid, processes 7697-37-2, Nitric acid, processes 7722-84-1, Hydrogen
peroxide, processes 7733-02-0, Zinc sulfate 7758-89-6, Cuprous

chloride 7758-98-7, Cupric sulfate, processes 7775-09-9, Sodium chlorate (NaClO₃) 8061-51-6, Sodium lignosulfonate 9002-89-5, Polyvinyl alcohol 9002-92-0, Poly(oxyethylene)lauryl ether 9004-32-4, Carboxymethylcellulose 12125-01-8, Ammonium fluoride 14066-19-4, Monohydrogen phosphate, processes 14265-44-2, Phosphate, processes 16887-00-6, Chloride, processes 17084-08-1, Hexafluorosilicate 26053-72-5, Diphenylsulfamic acid 27846-09-9, Iron monochloride 89800-24-8, Laprol 602
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)

(in compns. and processes for spin **etch** planarization in **semiconductor** device fabrication)

RE.CNT 10 THERE ARE 10 CITED REFERENCES AVAILABLE FOR THIS RECORD

RE

- (1) Anon; PATENT ABSTRACTS OF JAPAN 1997, V1997(01)
- (2) Contolini; US 5486234 A 1996 CAPLUS
- (3) Gelchinski; US 4497692 A 1985 CAPLUS
- (4) Ibm; EP 0699782 A 1996 CAPLUS
- (5) Kern; RCA REVIEW 1978, V39(2), P278 CAPLUS
- (6) Samsung Electronics; DE 19928570 A 1999 CAPLUS
- (7) Sasaki; US 5770095 A 1998 CAPLUS
- (8) Sez Semiconductor-Equipment; EP 0905754 A 1999 CAPLUS
- (9) Ube Ind Ltd; JP 08236615 A 1996 CAPLUS
- (10) Unvala; JOURNAL OF THE ELECTROCHEMICAL SOCIETY 1972, V119(3), P318 CAPLUS

L27 ANSWER 11 OF 38 CAPLUS COPYRIGHT 2002 ACS

AN 2001:43400 CAPLUS

DN 134:94377

TI Process for treating a **semiconductor** substrate

IN Arndt, Russell H.; Gale, Glenn Walton; Kern, Frederick William, Jr.; Madden, Karen P.; Okorn-schmidt, Harald F.; Ouimet, George Francis, Jr.; Salgado, Dario; Wuthrich, Ryan Wayne

PA International Business Machines Corporation, USA

SO U.S., 3 pp.

CODEN: USXXAM

DT Patent

LA English

IC ICM H01L021-302

NCL 134001300

CC 76-3 (Electric Phenomena)

Section cross-reference(s): 66

FAN.CNT 1

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|----|---------------|------|----------|-----------------|----------|
| PI | US 6173720 | B1 | 20010116 | US 1998-203927 | 19981202 |
| | KR 2000047644 | A | 20000725 | KR 1999-50530 | 19991115 |
| | US 6354309 | B1 | 20020312 | US 2000-671730 | 20000929 |

PRAI US 1998-203927 A 19981202

AB **Semiconductor** substrates are contacted with a deionized water soln. contg. an acidic material. The method involves treating a silicon substrate which includes treating the substrate with HF acid, displacing with a los pH soln., displacing the low pH soln. with an org. solvent, and drying with an inert gas.

ST acid soln org solvent **semiconductor** substrate treatment

IT Cleaning

Etching

Semiconductor device fabrication

Semiconductor materials

(acidic soln. and org. solvent in treatment of a **semiconductor** substrate)

IT 67-63-0, Isopropyl alcohol, properties 463-79-6,

Carbonic acid, properties 7664-39-3, Hydrogen fluoride, properties
RL: PRP (Properties); RCT (Reactant); TEM (Technical or engineered)

material use); RACT (Reactant or reagent); USES (Uses)
(acidic soln. and org. solvent in treatment of a **semiconductor**
substrate)

RE.CNT 23 THERE ARE 23 CITED REFERENCES AVAILABLE FOR THIS RECORD

RE

- (1) Akira; Patent Abstracts of Japan 1993
- (2) Anon; JP 06192861 1994 CAPLUS
- (3) Anon; JP 06291099 1994 CAPLUS
- (4) Anon; JP 07283182 1995 CAPLUS
- (5) Anon; JP 07283191 1995 CAPLUS
- (6) Anon; JP 09027469 1997 CAPLUS
- (7) Anon; EP 782177 A2 1997 CAPLUS
- (8) Anon; DE 19723918 1998 CAPLUS
- (9) Anon; JP 11080787 1999 CAPLUS
- (10) Anon; JP 2000056478 2000 CAPLUS
- (11) Anttila; US 5382296 1995 CAPLUS
- (12) Beck; US 3813311 1974 CAPLUS
- (13) Fleming; US 5294570 1994
- (14) Izumi; US 5571375 1996 CAPLUS
- (15) Kinya; Patent Abstracts of Japan 1997
- (16) Lee; Bull, Korean Chem Soc 1997, V18(7)
- (17) Li; US 5681397 1997 CAPLUS
- (18) Li; J Appl Phys 1995, V77(3), P1323 CAPLUS
- (19) Mashimo; US 5261966 1993 CAPLUS
- (20) Michiko; Patent Abstracts of Japan 1992
- (21) Olesen; US 5656097 1997 CAPLUS
- (22) Tachimori; US 5373804 1994 CAPLUS
- (23) Ueno; US 5882433 1999

L27 ANSWER 12 OF 38 CAPLUS COPYRIGHT 2002 ACS

AN 2001:12778 CAPLUS

DN 134:79754

TI Acid blend for removing **etch** residue on **semiconductor**
substrates

IN Torek, Kevin J.; Yates, Donald L.

PA Micron Technology, Inc., USA

SO PCT Int. Appl., 49 pp.

CODEN: PIXXD2

DT Patent

LA English

IC ICM H01L021-3213

ICS H01L021-306; G03F007-42

CC 76-3 (Electric Phenomena)

FAN.CNT 1

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------|--|------|----------|-----------------|----------|
| PI | WO 2001001474 | A1 | 20010104 | WO 2000-US40096 | 20000605 |
| | W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR,
CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU,
ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU,
LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD,
SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA,
ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM | | | | |
| | RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY,
DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ,
CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG | | | | |
| | EP 1196949 | A1 | 20020417 | EP 2000-945418 | 20000605 |
| | R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,
IE, SI, LT, LV, FI, RO | | | | |
| PRAI | US 1999-342243 | A | 19990629 | | |
| | WO 2000-US40096 | W | 20000605 | | |
| AB | A method is presented for removing organometallic and organosilicate residues remaining after a dry etch process from | | | | |

semiconductor substrates. The substrate is exposed to a conditioning soln. of a F source, a nonaq. solvent, a complementary acid, and a surface passivation agent. The F source is typically HF. The nonaq. solvent is typically a polyhydric alc. such as propylene glycol. The complementary acid is typically either H₃PO₄ or HCl. The surface passivation agent is typically a carboxylic acid such as citric acid. Exposing the substrate to the conditioning soln. removes the remaining dry **etch** residues while minimizing removal of material from desired substrate features.

ST **etching** residue removal acid blend **semiconductor** device fabrication

IT Passivation
 Semiconductor device fabrication
 (acid blend for removing **etch** residue on
 semiconductor substrates)

IT **Etching**
 (dry; acid blend for removing **etch** residue on
 semiconductor substrates)

IT Chelating agents
 (**etching** passivation agent; acid blend for removing
 etch residue on **semiconductor** substrates)

IT Alcohols, processes
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
 (polyhydric; acid blend for removing **etch** residue on
 semiconductor substrates)

IT 515-98-0, Ammonium lactate 10043-35-3, Boric acid, processes
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
 (anti-**etch** agent; acid blend for removing **etch** residue on
 semiconductor substrates)

IT 124-38-9, Carbon dioxide, processes 7727-37-9, Nitrogen, processes
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
 (**etch** rinsing process gas; acid blend for removing
 etch residue on **semiconductor** substrates)

IT 7647-01-0, Hydrogen chloride, processes 7664-38-2, Phosphoric acid, processes 7664-39-3, Hydrogen fluoride, processes 12125-01-8, Ammonium fluoride
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
 (**etchant**; acid blend for removing **etch** residue on
 semiconductor substrates)

IT 60-00-4, EDTA, processes 64-19-7, Acetic acid, processes 77-92-9, Citric acid, processes 62624-30-0, Ascorbic acid
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
 (**etching** passivation agent; acid blend for removing
 etch residue on **semiconductor** substrates)

IT 57-55-6, Propylene glycol, processes 67-63-0, Isopropyl alcohol, processes 67-68-5, Dimethylsulfoxide, processes 107-21-1, Ethylene glycol, processes 108-32-7, Propylene carbonate 109-99-9, Tetrahydrofuran, processes
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
 (**etching** solvent; acid blend for removing **etch** residue on
 semiconductor substrates)

IT 463-79-6, Carbonic acid, processes
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
 (rinsing agent; acid blend for removing **etch** residue on
 semiconductor substrates)

RE

(1) Grieger; US 5855811 A 1999 CAPLUS
(2) Mitsubishi Gas Chemical; EP 0827188 A 1998 CAPLUS
(3) Wakp Pure Chemicals; EP 0812011 A 1997 CAPLUS
(4) Ward; US 5698503 A 1997 CAPLUS

L27 ANSWER 13 OF 38 CAPLUS COPYRIGHT 2002 ACS
AN 2000:725881 CAPLUS

DN 133:289930

X TI Selective **etching** of doped from undoped polysilicon in **semiconductor** device fabrication

IN Mercaldi, Garry A.; Yates, Donald L. **Inventor**

PA Micron Technology, Inc., USA

SO PCT Int. Appl., 31 pp.

CODEN: PIXXD2

DT Patent

LA English

IC ICM H01L021-306

ICS H01L021-3213; C23F001-00

CC 76-3 (Electric Phenomena)

Section cross-reference(s): 21

FAN.CNT 1

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------|---|------|----------|-----------------|----------|
| PI | WO 2000060651 | A1 | 20001012 | WO 2000-US8939 | 20000405 |
| | W: AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM, EE, ES, FI, GB, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM | | | | |
| | RW: GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG | | | | |
| | US 2001004553 | A1 | 20010621 | US 1999-285773 | 19990405 |
| | EP 1177575 | A1 | 20020206 | EP 2000-921671 | 20000405 |
| | R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO | | | | |
| | US 6316370 | B1 | 20011113 | US 2000-644699 | 20000824 |
| PRAI | US 1999-285773 | A | 19990405 | | |
| | WO 2000-US8939 | W | 20000405 | | |
| AB | The present invention provides an etching compn. which includes a polyhydric alc. in combination with two inorg. acids. Preferably the etching compn. of the present invention is a mixt. of a glycol, nitric acid and hydrofluoric acid, with propylene glycol being preferred. The etching compn. of the present invention achieves a selectivity of greater than 70:1, doped material to undoped material. The present invention provides an etching formulation which has increased selectivity of doped polysilicon to undoped polysilicon and provides an efficient integrated circuit fabrication process without requiring time consuming and costly processing modifications to the etching app. or prodn. app. | | | | |
| ST | hydric alc inorg acid selective etching doping silicon; propylene glycol nitric hydrofluoric acid etching semiconductor device fabrication | | | | |
| IT | Densification
(BSPG; and selective etching in semiconductor device fabrication) | | | | |
| IT | Annealing
(and selective etching of doped from undoped polysilicon in semiconductor device fabrication) | | | | |
| IT | Glycols, processes
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical | | | | |

process); PROC (Process); USES (Uses)
(etchants; in selective etching of doped from
undoped polysilicon in **semiconductor** device fabrication)

IT Borophosphosilicate glasses
RL: PEP (Physical, engineering or chemical process); TEM (Technical or
engineered material use); PROC (Process); USES (Uses)
(in selective etching of doped from undoped polysilicon in
semiconductor device fabrication)

IT Acids, processes
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical
process); PROC (Process); USES (Uses)
(inorg., etchants; in selective etching of doped
from undoped polysilicon in **semiconductor** device fabrication)

IT Alcohols, processes
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical
process); PROC (Process); USES (Uses)
(polyhydric, etchants; in selective etching of
doped from undoped polysilicon in **semiconductor** device
fabrication)

IT **Semiconductor** device fabrication
(selective etching of doped from undoped polysilicon in)

IT Doping
(selective etching of doped from undoped polysilicon in
semiconductor device fabrication)

IT **Etching**
(selective; of doped from undoped polysilicon in **semiconductor**
device fabrication)

IT 7440-56-4, Germanium, processes
RL: PEP (Physical, engineering or chemical process); TEM (Technical or
engineered material use); PROC (Process); USES (Uses)
(doped; selective etching of)

IT 50-70-4, Sorbitol, processes 57-55-6, Propylene glycol, processes
64-17-5, Ethanol, processes 67-63-0, Isopropanol,
processes 71-23-8, Propanol, processes 71-36-3,
n-Butanol, processes 78-83-1, Iso-butanol, processes 106-69-4,
1,2,6-Hexanetriol 107-21-1, Ethylene glycol, processes 107-41-5,
Hexylene glycol 107-88-0, Butylene glycol 111-29-5, 1,5-Pentanediol
463-79-6, Carbonic acid, processes 7601-90-3, Perchloric
acid, processes 7664-39-3, Hydrofluoric acid, processes
7664-93-9, Sulfuric acid, processes 7697-37-2, Nitric acid,
processes 7782-99-2, Sulfurous acid, processes
10043-35-3, Boric acid, processes 25265-71-8, Dipropylene glycol
54289-82-6
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical
process); PROC (Process); USES (Uses)
(etchants; in selective etching of doped from
undoped polysilicon in **semiconductor** device fabrication)

IT 7631-86-9, Silica, processes
RL: PEP (Physical, engineering or chemical process); TEM (Technical or
engineered material use); PROC (Process); USES (Uses)
(in selective etching of doped from undoped polysilicon in
semiconductor device fabrication)

IT 7440-21-3, Silicon, processes
RL: PEP (Physical, engineering or chemical process); TEM (Technical or
engineered material use); PROC (Process); USES (Uses)
(polycryst.; selective etching of doped from undoped
polysilicon in **semiconductor** device fabrication)

RE.CNT 9 THERE ARE 9 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE
(1) Anon; PATENT ABSTRACTS OF JAPAN 1984, V008(058), PP-261
(2) Anon; PATENT ABSTRACTS OF JAPAN 1993, V017(681), PP-1660
(3) Baeslack, W; MATERIALS CHARACTERIZATION 1993, V31(4), P197 CAPLUS
(4) Holoubek Jiri Ing; CS 272371 B 1991 CAPLUS

- (5) Kogyo Gijutsuin; JP 58207009 A 1983 CAPLUS
- (6) Sez Semiconduct Equip Zubehoer; EP 0905754 A 1999 CAPLUS
- (7) Sumitomo Metal Ind Ltd; JP 05231996 A 1993
- (8) Takeuchi Hiroshi; US 5017513 A 1991 CAPLUS
- (9) Woo, S; US 5518966 A 1996 CAPLUS

X L27 ANSWER 14 OF 38 CAPLUS COPYRIGHT 2002 ACS
 AN 2000:440534 CAPLUS
 DN 133:67139
 TI Anisotropic **etching** of semiconductors and **etchant**
 solutions provided in **etching** thereof
 IN Terashima, Kentaro
 PA Sharp Corp., Japan
 SO Jpn. Kokai Tokkyo Koho, 6 pp.
 CODEN: JKXXAF
 DT Patent
 LA Japanese
 IC ICM H01L021-308
 ICS C09K013-04; C09K013-06
 CC 76-3 (Electric Phenomena)
 FAN.CNT 1

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---------------|-------|----------|-----------------|----------|
| ----- | ----- | ----- | ----- | ----- |
| JP 2000183047 | A2 | 20000630 | JP 1998-358169 | 19981216 |

AB The **etchant** solns. for anisotropic **etching** of
 zinc-blende crystal structure **semiconductor** wafers at an
etching angle 45.degree. normal-mesa anisotropy contain .gtoreq.5
 wt.% HCl, .gtoreq.5 wt.% HBr, and an acid solvent. The **etching**
 as a chem. process gives an improved productivity and economy in manufg.
 in comparison to prior-art cutting or slicing as mech./phys. process.
 ST hydrogen chloride bromide **etchant** anisotropic **etching**
semiconductor wafer
 IT Sphalerite-type crystals
 (anisotropic **etching** of; anisotropic **etching** of
 semiconductors and **etchant** solns. provided in **etching**
 thereof)
 IT **Etching**
 (anisotropic, **etchant** soln. for; anisotropic **etching**
 of semiconductors and **etchant** solns. provided in
 etching thereof)
 IT **Semiconductor** materials
 (**etching** of; anisotropic **etching** of semiconductors
 and **etchant** solns. provided in **etching** thereof)
 IT 64-17-5, Ethanol, uses 64-19-7, Acetic acid, uses
 7664-38-2, Phosphoric acid, uses 62309-51-7, Propanol
 RL: MOA (Modifier or additive use); USES (Uses)
 (anisotropic **etching** of semiconductors and **etchant**
 solns. provided in **etching** thereof)
 IT 7647-01-0, Hydrogen chloride, properties 10035-10-6, Hydrogen bromide,
 properties
 RL: NUU (Other use, unclassified); PRP (Properties); TEM (Technical or
 engineered material use); USES (Uses)
 (**etchant**; anisotropic **etching** of semiconductors and
 etchant solns. provided in **etching** thereof)

X L27 ANSWER 15 OF 38 CAPLUS COPYRIGHT 2002 ACS
 AN 2000:344088 CAPLUS
 DN 132:328632
 TI Method of fabricating embedded gate electrodes
 IN Chen, Chih-rong; Yeh, Chi-chin
 PA United Microelectronics Corp., Taiwan
 SO U.S., 12 pp.
 CODEN: USXXAM

DT Patent
LA English
IC ICM H01L021-336
NCL 438259000
CC 76-3 (Electric Phenomena)
FAN.CNT 1

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|----|--|------|----------|-----------------|----------|
| PI | US 6066532 | A | 20000523 | US 1999-419434 | 19991018 |
| AB | A method of fabricating an embedded gate electrode is disclosed. The method includes the steps of: Providing a semiconductor substrate; forming a patterned etch resistant mask layer over the semiconductor substrate, wherein the patterned etch resistant mask layer has a 1st opening for a desired location of a trench; anisotropically etching through the patterned etch resistant mask layer and into the semiconductor substrate, hence forming the trench at the desired location; removing the patterned etch resistant mask layer; depositing a 1st insulating layer over the semiconductor substrate and filling up the trench; patterning a planarized 1st insulating layer to define a 2nd opening for the embedded gate electrode; forming a 2nd insulating layer at the bottom of the 2nd opening; depositing a conductive layer over the 2nd insulating layer and filling up the 2nd opening, hence forming the embedded gate electrode; ion implanting the semiconductor substrate to form source/drain regions; forming a spacer on the sidewall of the embedded gate electrode; depositing a refractory metal layer over the entire exposing surface of a resulting structure; and annealing the refractory metal layer to form a silicide layer on the embedded gate electrode and elsewhere on the source/drain regions. | | | | |
| ST | refractory metal silicidation gate electrode | | | | |
| IT | Etching
(anisotropic; in method of fabricating embedded gate electrodes) | | | | |
| IT | Vapor deposition process
(chem.; in method of fabricating embedded gate electrodes) | | | | |
| IT | Films
Films
(elec. conductive; in method of fabricating embedded gate electrodes) | | | | |
| IT | Electric conductors
Electric conductors
(films; in method of fabricating embedded gate electrodes) | | | | |
| IT | Annealing
Cleaning
Dielectric films
Electron beam evaporation
Etching masks
Ion implantation
Magnetron sputtering
Photolithography
Rapid thermal annealing
Siliconizing
(in method of fabricating embedded gate electrodes) | | | | |
| IT | Refractory metal silicides
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); SPN (Synthetic preparation); PREP (Preparation); PROC (Process); USES (Uses)
(in method of fabricating embedded gate electrodes) | | | | |
| IT | Refractory metals
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(in method of fabricating embedded gate electrodes) | | | | |
| IT | Semiconductor device fabrication
(method of fabricating embedded gate electrodes) | | | | |
| IT | Etching | | | | |

(selective; in method of fabricating embedded gate electrodes)
IT 7664-38-2, Phosphoric acid, uses
RL: NUU (Other use, unclassified); USES (Uses)
(etchant for silicon nitride; in method of fabricating
embedded gate electrodes)
IT 7440-21-3, Silicon, processes 7631-86-9, Silica, processes 12033-89-5,
Silicon nitride, processes
RL: DEV (Device component use); PEP (Physical, engineering or chemical
process); PROC (Process); USES (Uses)
(in method of fabricating embedded gate electrodes)
IT 7440-38-2, Arsenic, uses 7723-14-0, Phosphorus, uses
RL: MOA (Modifier or additive use); USES (Uses)
(in method of fabricating embedded gate electrodes)
IT 67-63-0, Isopropanol, uses 1310-58-3, Potassium hydroxide, uses
7664-39-3, Hydrogen fluoride, uses 7664-93-9, Sulfuric acid,
uses 7722-84-1, Hydrogen peroxide, uses
RL: NUU (Other use, unclassified); USES (Uses)
(in method of fabricating embedded gate electrodes)
IT 7440-06-4, Platinum, processes 7440-32-6, Titanium, processes
7440-38-2D, Arsenic, ions, processes 7440-48-4, Cobalt, processes
7723-14-0D, Phosphorus, ions, processes
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical
process); PROC (Process); USES (Uses)
(in method of fabricating embedded gate electrodes)

RE.CNT 4 THERE ARE 4 CITED REFERENCES AVAILABLE FOR THIS RECORD

RE

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- (2) Gardner; US 5998288 1999 CAPLUS
- (3) Hsue; US 5668031 1997 CAPLUS
- (4) Miwa; US 5583065 1996 CAPLUS

L27 ANSWER 16 OF 38 CAPLUS COPYRIGHT 2002 ACS

AN 2000:271922 CAPLUS

DN 132:272924

TI Improving the wet process chemical sequence in **semiconductor**
wafer **etching** cleanup

IN Niccoli, John V.

PA Texas Instruments Incorporated, USA

SO U.S., 7 pp.

CODEN: USXXAM

DT Patent

LA English

IC ICM H01L021-00

NCL 438745000

CC 76-3 (Electric Phenomena)

FAN.CNT 1

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------|----------------|------|----------|-----------------|----------|
| PI | US 6054393 | A | 20000425 | US 1998-4239 | 19980108 |
| PRAI | US 1997-34214P | P | 19970109 | | |

AB A method for **semiconductor** wafer **etching** cleanup
comprises placing an oxide layer on a Si wafer, cleaning the wafer surface
with an **etching** agent cleaning soln., such as HF, and washing
the wafer surface with a cleaning soln., prior to drying with iso-ProOH
vapor to reduce the no. of defects caused by the formation of watermarks
on the wafer surface.

ST **semiconductor** wafer **etching** cleanup; hydrofluoric acid
cleaning silicon wafer; isopropanol vapor drying **etched** silicon
wafer

IT Cleaning

Etching

Semiconductor materials

(improving wet process chem. sequence in **semiconductor** wafer

etching cleanup)
IT **Semiconductor** device fabrication
 (improving wet process chem. sequence in silicon wafer **etching**
 cleanup in)
IT Washing
 (in improving wet process chem. sequence in **semiconductor**
 wafer **etching** cleanup)
IT **67-63-0**, Isopropanol, processes
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical
process); PROC (Process); USES (Uses)
 (drying with vapor of; in improving wet process chem. sequence in
 semiconductor wafer **etching** cleanup)
IT 7440-21-3, Silicon, processes
RL: DEV (Device component use); PEP (Physical, engineering or chemical
process); PROC (Process); USES (Uses)
 (improving wet process chem. sequence in silicon wafer **etching**
 cleanup)
IT 7631-86-9, Silica, processes
RL: DEV (Device component use); PEP (Physical, engineering or chemical
process); PROC (Process); USES (Uses)
 (in improving wet process chem. sequence in **semiconductor**
 wafer **etching** cleanup)
IT 1336-21-6, Ammonium hydroxide ((NH₄)(OH)) 7647-01-0, Hydrogen chloride,
processes 7664-39-3, Hydrogen fluoride, processes **7664-93-9**,
Sulfuric acid, processes 7722-84-1, Hydrogen peroxide, processes
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical
process); PROC (Process); USES (Uses)
 (in improving wet process chem. sequence in **semiconductor**
 wafer **etching** cleanup)

RE.CNT 5 THERE ARE 5 CITED REFERENCES AVAILABLE FOR THIS RECORD

RE

- (1) Chen; US 5308400 1994 CAPLUS
- (2) Chien; US 5328867 1994 CAPLUS
- (3) Fujii; US 5278448 1994 CAPLUS
- (4) McConnell; US 4795497 1989
- (5) McConnell; US 4917123 1990

L27 ANSWER 17 OF 38 CAPLUS COPYRIGHT 2002 ACS

X AN 1999:789811 CAPLUS

DN 132:28450

TI Lens fiber coupler assembly and its production thereof

IN Anderson, Eric R.; Tran, Dean; Strijek, Ronald L.; Rezek, Edward A.

PA TRW Inc., USA

SO Jpn. Kokai Tokkyo Koho, 9 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

IC ICM G02B006-42

 ICS G02B006-00; H01L021-306; H01L021-308

CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related
Properties)

Section cross-reference(s): 74

FAN.CNT 1

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------|---------------|------|----------|-----------------|----------|
| PI | JP 11344649 | A2 | 19991214 | JP 1999-127707 | 19990507 |
| PRAI | US 1998-74193 | | 19980507 | | |

AB The invention refers to a lens fiber coupler assembly and its prodn.,
wherein photolithog. methods and anisotropic **etching** of III - V
semiconductor materials are use to decrease the device size,
facilitate large scale prodn. and increase reliability.

ST lens fiber coupler photolithog **semiconductor** materials
anisotropic **etching**

IT **Semiconductor** materials
 (Group IIIA element pnictide; lens fiber coupler assembly and prodn. thereof)

IT **Etching**
 (anisotropic; lens fiber coupler assembly and prodn. thereof)

IT Optical couplers
 Photolithography
 (lens fiber coupler assembly and prodn. thereof)

IT 64-17-5, Ethanol, processes 67-56-1, Methanol, processes
 67-63-0, Isopropanol, processes 77-92-9, Citric acid, processes
 1336-21-6, Ammonium hydroxide 7647-01-0, Hydrogen chloride, processes
 7664-38-2, Phosphoric acid, processes 7664-39-3, Hydrogen
 fluoride, processes 7664-93-9, Sulfuric acid, processes
 7697-37-2, Nitric acid, processes 7705-08-0, Iron chloride, processes
 7722-84-1, Hydrogen peroxide, processes 7726-95-6, Bromine, processes
 7758-05-6, Potassium iodate 7789-00-6, Potassium chromate 10035-10-6,
 Hydrogen bromide, processes
 RL: PEP (Physical, engineering or chemical process); PROC (Process)
 (anisotropic **etching** of III - V **semiconductor**
 materials)

IT 111-15-9, 2-Ethoxyethyl acetate 142-62-1, Butylacetic acid, uses
 999-97-3, Hexamethyldisilazane 1303-00-0, Gallium arsenide, uses
 1303-11-3, Indium arsenide, uses 1330-20-7, Xylene, uses 1344-28-1,
 Aluminum oxide, uses 7631-86-9, Silica, uses 12033-89-5, Silicon
 nitride, uses 12063-98-8, Gallium phosphide, uses 22398-80-7, Indium
 phosphide, uses
 RL: DEV (Device component use); USES (Uses)
 (lens fiber coupler assembly and prodn. thereof)

X L27 ANSWER 18 OF 38 CAPLUS COPYRIGHT 2002 ACS
 AN 1999:538084 CAPLUS
 DN 131:152697
 TI Device and method for wet-**etching** of **semiconductor**
 disks
 IN Summitsch, Franz; Wagner, Gerald
 PA SEZ Semiconductor-Equipment Zubehoer fuer die Halbleiterfertigung A.-G.,
 Austria
 SO Ger. Offen., 8 pp.
 CODEN: GWXXBX
 DT Patent
 LA German
 IC ICM H01L021-304
 ICS C23F001-16
 CC 76-3 (Electric Phenomena)

FAN.CNT 1

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|----|-------------|------|----------|------------------|----------|
| PI | DE 19805525 | A1 | 19990819 | DE 1998-19805525 | 19980211 |
| | DE 19805525 | C2 | 20020613 | | |
| | IT 1309069 | B1 | 20020116 | IT 1999-MI120 | 19990122 |
| | GB 2334374 | A1 | 19990818 | GB 1999-1810 | 19990127 |
| | JP 11274147 | A2 | 19991008 | JP 1999-27834 | 19990204 |
| | JP 3242082 | B2 | 20011225 | | |
| | TW 421830 | B | 20010211 | TW 1999-88102080 | 19990210 |
| | US 6162739 | A | 20001219 | US 1999-248094 | 19990211 |

PRAI DE 1998-19805525 A 19980211

AB An **etching** medium contains an agent which affects viscosity,
 surface energy, and/or vapor pressure of the **etching** medium in
 addn. to HF or a (HF + NH4F) combination which is effective for wet
 etching of **semiconductor** disks, esp. Si wafers. During
 etching, a SiO2 layer is removed from the upper side, an edge, and
 a defined edge area of the lower side of the Si wafer. Under-
 etching in a defined area attains that the edge of the SiO2 layer

remaining on the bottom side of the wafer is smooth.
ST wet **etching semiconductor**; silicon wafer wet
etching
IT **Etching**
 (of **semiconductor** disks)
IT **Semiconductor** devices
 (wet-**etching** of)
IT 50-21-5, Lactic acid, uses 56-81-5, Glycerol, uses **64-17-5**,
Ethanol, uses 64-18-6, Formic acid, uses 64-19-7, Acetic acid, uses
65-85-0, Benzoic acid, uses 67-56-1, Methanol, uses **67-63-0**,
Isopropanol, uses 67-64-1, Acetone, uses **71-36-3**, Butanol,
uses 77-92-9, Citric acid, uses 79-09-4, Propionic acid, uses
107-21-1, Ethylene glycol, uses 107-92-6, Butyric acid, uses 111-46-6,
Diethylene glycol, uses 124-38-9, Carbon dioxide, uses 141-78-6,
Acetic acid ethyl ester, uses 144-55-8, Sodium bicarbonate, uses
144-62-7, Oxalic acid, uses 7647-01-0, Hydrochloric acid, uses
7664-38-2, Phosphoric acid, uses **7664-93-9**, Sulfuric
acid, uses
RL: MOA (Modifier or additive use); USES (Uses)
 (in **etching** medium for silicon wafers)
IT 7664-39-3, Hydrofluoric acid, processes 12125-01-8, Ammonium fluoride
RL: PEP (Physical, engineering or chemical process); PROC (Process)
 (in wet-**etching** of silicon wafers)
IT 7440-21-3, Silicon, processes
RL: PEP (Physical, engineering or chemical process); PROC (Process)
 (wet-**etching** of silicon wafers)
RE.CNT 7 THERE ARE 7 CITED REFERENCES AVAILABLE FOR THIS RECORD

RE
(1) Anon; JP 09181026 A
(2) Anon; US 4087367
(3) Anon; US 4795582 CAPLUS
(4) Anon; US 4871422 CAPLUS
(5) Anon; US 5439553 CAPLUS
(6) Gaulhofer, E; Solid State Technology 1991, 219, P57
(7) Monk, D; J Electrochem Soc 1994, V141(1), P264 CAPLUS

L27 ANSWER 19 OF 38 CAPLUS COPYRIGHT 2002 ACS
AN 1999:390297 CAPLUS
DN 131:24962
TI Electrolytic **etching** method, method for producing
photoelectromotive force element and method for treatment of defective of
photoelectromotive force element
IN Ichinose, Hiroyumi; Ueno, Yukie; Murakami, Tsutomu; Sawayama, Ippei;
Hisamatsu, Masaya
PA Canon K. K., Japan
SO Jpn. Kokai Tokkyo Koho, 12 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
IC ICM H01L021-3063
 ICS C25F003-12; H01L021-306; H01L031-04
CC 72-7 (Electrochemistry)
 Section cross-reference(s): 52

FAN.CNT 1

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------|---|------|----------|-----------------|----------|
| PI | JP 11162931 | A2 | 19990618 | JP 1998-257399 | 19980911 |
| | XUS 2001007306 | A1 | 20010712 | US 1998-149280 | 19980909 |
| PRAI | JP 1997-246273 | A | 19970911 | | |
| AB | Electrolytic etching is carried out in which the contact angle
of the electrolytic soln. to the material etched is
.ltoreq.70.degree.. An additive which is selected from the group
consisting of polyethylene glycol, polypropylene glycol, acetylene alc., | | | | |

ethanol, or their copolymers and surfactant is used to the electrolytic **etching** bath. A photoelectromotive force element is fabricated by forming an **etched** elec. conductive layer on a **semiconductor** layer on a substrate. The method for treatment of defectives of a photoelectromotive force element involves redn. of the elec. conductive layer surrounding a short circuit. Patterning with excellent selectivity can be carried out.

ST electrolytic **etching** photoelectromotive force element defective treatment

IT Solar cells
(amorphous photoelectromotive force element; electrolytic **etching** method, method for producing photoelectromotive force element and method for treatment of defective of photoelectromotive force element)

IT Surfactants
(as an additive to electrolytic **etching** bath)

IT Polyoxyalkylenes, uses
RL: MOA (Modifier or additive use); USES (Uses)
(as an additive to electrolytic **etching** bath)

IT **Etching**
(electrochem.; electrolytic **etching** method, method for producing photoelectromotive force element and method for treatment of defective of photoelectromotive force element)

IT 64-17-5, Ethanol, uses 25322-68-3 25322-69-4 32038-79-2,
Ethynol
RL: MOA (Modifier or additive use); USES (Uses)
(as an additive to electrolytic **etching** bath)

IT 7664-93-9, Sulfuric acid, uses
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(electrolytic **etching** from bath contg.)

IT 7440-21-3, Silicon, uses
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(substrate; electrolytic **etching** method, method for producing photoelectromotive force element and method for treatment of defective of photoelectromotive force element)

X L27 ANSWER 20 OF 38 CAPLUS COPYRIGHT 2002 ACS
AN 1999:219925 CAPLUS
DN 130:260620
Date TI Planarization of **semiconductor** substrates and an aqueous **etching** solution for it
IN Kruwinus, Hans-Jurgen; Sellmer, Reinhard
PA SEZ Semiconductor-Equipment Zubehor Fur Die Halbleiterfertigung Ag, Austria
SO Eur. Pat. Appl., 9 pp.
CODEN: EPXXDW
DT Patent
LA German
IC ICM H01L021-3105
ICS H01L021-321; H01L021-311; H01L021-3213
CC 76-3 (Electric Phenomena)
FAN.CNT 1

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|----|---|------|----------|------------------|----------|
| PI | EP 905754 | A2 | 19990331 | EP 1998-115931 | 19980824 |
| | EP 905754 | A3 | 20010516 | | |
| | R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO | | | | |
| | AT 9701658 | A | 20020515 | AT 1997-1658 | 19970930 |
| | DE 19806406 | C1 | 19990729 | DE 1998-19806406 | 19980217 |
| | JP 11162930 | A2 | 19990618 | JP 1998-276271 | 19980930 |

| | | | | |
|--|---|--|----------------|----------|
| EP 938133 | A2 | 19990825 | EP 1999-101974 | 19990201 |
| EP 938133 | A3 | 19991103 | | |
| EP 938133 | B1 | 20010912 | | |
| R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,
IE, SI, LT, LV, FI, RO | | | | |
| AT 205636 | E | 20010915 | AT 1999-101974 | 19990201 |
| JP 11312664 | A2 | 19991109 | JP 1999-68781 | 19990209 |
| US 6169038 | B1 | 20010102 | US 1999-251288 | 19990217 |
| PRAI AT 1997-1658 | A | 19970930 | | |
| DE 1998-19806406 | A | 19980217 | | |
| AB | To remove a layer from a substrate having trenches or contact holes such that the layer remains only in the trenches or contact holes, an etchant is supplied as a continuous stream at a flow rate of ≥ 0.4 L/min, so that the etchant covers the whole surface of the substrate. A differential etching rate occurs; the etching rate in the areas between the trenches or contact holes is higher than that in the regions of the trenches themselves, so the layer on the surface of the substrate is etched away faster than that in the trenches. | | | |
| ST | planarization semiconductor substrate aq etching soln | | | |
| IT | Acids, processes | | | |
| | RL: PEP (Physical, engineering or chemical process); PROC (Process)
(org.; planarization of semiconductor substrates with aq.
etching solns. contg.) | | | |
| IT | Etching | | | |
| | Semiconductor materials
(planarization of semiconductor substrates with aq.
etching soln.) | | | |
| IT | Contact holes
(planarization of semiconductor substrates with aq.
etching soln. by removing layers deposited over) | | | |
| IT | Alcohols, processes | | | |
| | Glycols, processes | | | |
| | Polyoxyalkylenes, processes | | | |
| | RL: PEP (Physical, engineering or chemical process); PROC (Process)
(planarization of semiconductor substrates with aq.
etching solns. contg.) | | | |
| IT | 7664-38-2, Phosphoric acid, processes | 7697-37-2, Nitric acid,
processes | | |
| | RL: PEP (Physical, engineering or chemical process); PROC (Process)
(etching by; in planarization of semiconductor
substrates) | | | |
| IT | 7647-01-0, Hydrogen chloride, processes | 7664-39-3, Hydrogen fluoride,
processes | | |
| | RL: PEP (Physical, engineering or chemical process); PROC (Process)
(etching by; planarization of semiconductor
substrates with aq. etching solns. contg.) | | | |
| IT | 7429-90-5, Aluminum, processes | 7440-50-8, Copper, processes | | |
| | 11129-80-9, Platinum silicide | 12627-41-7, Tungsten silicide | | |
| | 12738-91-9, Titanium silicide | 59141-85-4, Gold silicide | | |
| | RL: DEV (Device component use); PEP (Physical, engineering or chemical
process); PROC (Process); USES (Uses) | | | |
| | (planarization of semiconductor substrates by etching
of) | | | |
| IT | 7440-21-3, Silicon, processes | 7631-86-9, Silica, processes | | |
| | RL: DEV (Device component use); PEP (Physical, engineering or chemical
process); PROC (Process); USES (Uses) | | | |
| | (planarization of semiconductor substrates by etching
of layers on) | | | |
| IT | 56-81-5, Glycerol, processes | 64-17-5, Ethanol, processes | | |
| | 64-19-7, Acetic acid, processes | 7664-93-9, Sulfuric acid,
processes | | |
| | 7727-54-0, Ammonium persulfate | 12033-62-4, Tantalum nitride
(TaN) | | |
| | 12125-01-8, Ammonium fluoride (NH4F) | 13445-49-3D, | | |

Peroxydisulfuric acid, alkali metal salts 13530-68-2D, Chromic acid,
alkali metal salts 15593-29-0, Sodium peroxyomonosulfate (Na₂(SO₅))
25322-68-3, Polyethylene glycol
RL: PEP (Physical, engineering or chemical process); PROC (Process)
(planarization of **semiconductor** substrates with aq.
etching solns. contg.)

L27 ANSWER 21 OF 38 CAPLUS COPYRIGHT 2002 ACS
AN 1999:213100 CAPLUS
DN 130:259318
TI Manufacture of **semiconductor** light-emitting devices
IN Arakawa, Satoshi; Yamanaka, Nobumitsu; Nishikata, Kazuaki; Kasukawa,
Akihiko
PA Furukawa Electric Co., Ltd., Japan
SO Jpn. Kokai Tokkyo Koho, 8 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
IC ICM H01S003-18
CC 73-10 (Optical, Electron, and Mass Spectroscopy and Other Related
Properties)
Section cross-reference(s): 76

FAN.CNT 1

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|----|---|------|----------|-----------------|----------|
| PI | JP 11087836 | A2 | 19990330 | JP 1997-241003 | 19970905 |
| AB | The manufg. process, suitable for forming a laser device, comprises the
steps of: forming, on a substrate, an etch -stop and a 1st under
cladding layer; forming a ring mask, and forming therein a mesa comprising
a 2nd under cladding, a MQW active, and an upper cladding layer; removing
the ring mask; forming a stripe mask; and etching the upper
cladding and the 1st under cladding using the etch stop layer
for forming a MQW DH stripe structure. | | | | |
| ST | gallium indium arsenide phosphide MQW laser manuf | | | | |
| IT | Etching
Semiconductor lasers
(manuf. of semiconductor light-emitting devices) | | | | |
| IT | 12033-89-5, Silicon nitride, uses 106070-25-1, Gallium indium arsenide
(GaInAs)
RL: DEV (Device component use); USES (Uses)
(manuf. of semiconductor light-emitting devices) | | | | |
| IT | 64-17-5, Ethanol, reactions 7647-01-0, Hydrochloric acid,
reactions 7664-38-2, Phosphoric acid, reactions
7664-93-9, Sulfuric acid, reactions 7722-84-1, Hydrogen
peroxide, reactions 7726-95-6, Bromine, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(manuf. of semiconductor light-emitting devices) | | | | |

L27 ANSWER 22 OF 38 CAPLUS COPYRIGHT 2002 ACS
AN 1999:134050 CAPLUS
DN 130:260098
TI Wet-chemical nanoscale patterning of GaAs surfaces using atomic force
microscope lithography
AU Klehn, B.; Skaberna, S.; Kunze, U.
CS Lehrstuhl fur Werkstoffe der Elektrotechnik, Ruhr-Universitat Bochum,
Bochum, D-44780, Germany
SO Superlattices and Microstructures (1999), 25(1/2), 473-476
CODEN: SUMIEK; ISSN: 0749-6036
PB Academic Press
DT Journal
LA English
CC 76-3 (Electric Phenomena)
AB Sub-100 nm V-grooves in GaAs surfaces have been fabricated by patterning a

thin photoresist layer with an at. force microscope (AFM) and subsequent wet-chem. **etching**. The nanolithog. is based on the dynamic ploughing technique. Anisotropic **etchants** under study are Br-MeOH-isopropanol, H₂SO₄-H₂O₂-H₂O, citric acid-H₂O₂-H₂O, and NH₄OH-H₂O₂-H₂O. Along the [110] direction the **etched** grooves are V-shaped, along [1.hivin.10] the profile is U-shaped. Best results of 50-60-nm wide V-grooves with straight edges and smooth sidewalls are obtained from Br-MeOH-isopropanol, the other **etchants** form rough grooves. Concerning the reproducibility of the patterning process, the aq. **etch** solns. exceed the Br **etchant**. (c) 1999 Academic Press.

ST gallium arsenide atomic force microscope nanolithog **etching**
IT Lithography
 (nanoscale; wet-chem. nanoscale patterning of GaAs surfaces using at. force microscope lithog.)
IT **Etching**
 (patterning photoresist layer with AFM followed by wet chem. **etching**)
IT Photoresists
 (patterning photoresist layer with AFM followed by wet **etching**)
IT Atomic force microscopes
 Semiconductor device fabrication
 (wet-chem. nanoscale patterning of GaAs surfaces using at. force microscope lithog.)
IT 67-56-1, Methanol, processes 67-63-0, Isopropanol, processes
77-92-9, Citric acid, processes 1336-21-6, Ammonium hydroxide
((NH₄)(OH)) 7664-93-9, Sulfuric acid, processes 7726-95-6,
Bromine, processes
RL: PEP (Physical, engineering or chemical process); PROC (Process)
 (wet chem. **etching** using **etchants** contg.)
IT 1303-00-0, Gallium arsenide, processes
RL: PEP (Physical, engineering or chemical process); PROC (Process)
 (wet-chem. nanoscale patterning of GaAs surfaces using at. force microscope lithog.)

RE.CNT 23 THERE ARE 23 CITED REFERENCES AVAILABLE FOR THIS RECORD

RE

- (1) Avramescu, A; Appl Phys Lett 1998, V72, P716 CAPLUS
- (2) Avramescu, A; Jpn J Appl Phys 1997, V36, P4057 CAPLUS
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- (14) Otsubo, M; J Electrochem Soc 1976, V123, P676 CAPLUS
- (15) Park, S; Appl Phys Lett 1995, V67, P2415 CAPLUS
- (16) Shaw, D; J Electrochem Soc 1981, V128, P874 CAPLUS
- (17) Skaberna, S; Quantum Devices and Circuits 1997, P57
- (18) Snow, E; Appl Phys Lett 1994, V64, P1932 CAPLUS
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- (21) Tarui, Y; J Electrochem Soc 1971, V118, P118 CAPLUS
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- (23) Wendel, M; Appl Phys Lett 1994, V65, P1775 CAPLUS

X
Office

DN 130:87970
TI Method for producing a micro optical **semiconductor** lens
IN Tran, Dean; Anderson, Eric R.; Strijek, Ronald L.; Rezek, Edward A.
PA TRW Inc., USA
SO U.S., 13 pp.
CODEN: USXXAM
DT Patent
LA English
IC ICM H01L027-14
ICS H01L031-0304
NCL 430321000
CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
Section cross-reference(s): 76

FAN.CNT 1

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------|---------------|------|----------|-----------------|----------|
| | ----- | --- | ----- | ----- | ----- |
| PI | US 5853960 | A | 19981229 | US 1998-40636 | 19980318 |
| | JP 11298046 | A2 | 19991029 | JP 1998-372169 | 19981228 |
| PRAI | US 1998-40636 | | 19980318 | | |

AB Methods for fabricating Group-III-V **semiconductor** microlenses for hybrid integration with microoptical devices are described which entail forming lenses from a **semiconductor** wafer by selectively **etching** a surface of the **semiconductor** wafer and forming a lens arm from the **semiconductor** wafer on a surface opposite the surface by selectively **etching** the surface of the **semiconductor** wafer. The lens and lens arm may then be cleaved from the substrate wafer and directly mounted to a microoptical device. The lens may be provided with an antireflective coating and the lens arm may be metalized prior to cleaving. The **etching** step may be a wet or dry **etch**. By using a **semiconductor** material to form the lenses the thermal stability of the integrated systems is enhanced over conventional systems.

ST **semiconductor** microlens prodn
IT **Etching**
IT (dry; in **semiconductor** microlens prodn.)
IT **Sputtering**
IT (**etching**, reactive; in **semiconductor** microlens prodn.)
IT **Photoresists**
IT (in **semiconductor** microlens prodn.)
IT **Etching**
IT (plasma; in **semiconductor** microlens prodn.)
IT **Etching**
IT (selective; in **semiconductor** microlens prodn.)
IT **Microlenses**
IT (**semiconductor** microlens prodn.)
IT **Semiconductor** device fabrication
IT (**semiconductor** microlens prodn. in)
IT **Etching**
IT (sputter, reactive; in **semiconductor** microlens prodn.)
IT 7783-40-6, Magnesium fluoride 13709-52-9, Hafnium fluoride
IT RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
IT (antireflective coating contg.; **semiconductor** microlens prodn.)
IT 64-19-7, Acetic acid, uses 67-56-1, Methanol, uses **67-63-0**,
IT Isopropanol, uses 74-82-8, Methane, uses 74-88-4, Methyl iodide, uses
IT 75-03-6, Ethyl iodide 75-30-9, 2-Iodopropane 75-71-8,
IT Dichlorodifluoromethane 76-16-4, Hexafluoroethane 77-92-9, Citric
IT acid, uses 1333-74-0, Hydrogen, uses 1336-21-6, Ammonium hydroxide
IT 7440-37-1, Argon, uses 7647-01-0, Hydrochloric acid, uses
IT **7664-38-2**, Phosphoric acid, uses 7664-39-3, Hydrofluoric acid,

uses 7664-93-9, Sulfuric acid, uses 7697-37-2, Nitric acid:, uses 7705-08-0, Iron chloride (FeCl₃), uses 7722-84-1, Hydrogen peroxide, uses 7726-95-6, Bromine, uses 7758-05-6 7778-50-9, Potassium dichromate 7782-44-7, Oxygen, uses 7782-50-5, Chlorine, uses 7789-58-4, Iodine bromide (IBr₃) 10035-10-6, Hydrobromic acid, uses RL: NUU (Other use, unclassified); USES (Uses)
 (etchant contg.; in **semiconductor** microlens prodn.)

IT 1344-28-1, Aluminum oxide, uses 7631-86-9, Silicon dioxide, uses 12033-89-5, Silicon nitride, uses
 RL: DEV (Device component use); NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
 (mask compns. and antireflective coatings contg.; in **semiconductor** microlens prodn.)

IT 111-15-9, 2-Ethoxyethylacetate 123-86-4, n-Butyl acetate 999-97-3, Hexamethyldisilazane 1330-20-7, Xylene, uses
 RL: NUU (Other use, unclassified); USES (Uses)
 (mask compns. contg.; in **semiconductor** microlens prodn.)

IT 7440-06-4, Platinum, uses 7440-32-6, Titanium, uses 7440-57-5, Gold, uses
 RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
 (metalization; **semiconductor** microlens prodn.)

IT 1303-00-0, Gallium arsenide, uses 1303-11-3, Indium arsenide, uses 12063-98-8, Gallium phosphide, uses 22398-80-7, Indium phosphide, uses
 RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
 (**semiconductor** microlens prodn.)

RE.CNT 12 THERE ARE 12 CITED REFERENCES AVAILABLE FOR THIS RECORD

RE

- (1) Anon; JP 07-030082 1995 CAPLUS
- (2) Anon; Appl Phys Lett 1983, V43, P624
- (3) Anon; Electronics Letters 1988, V24(2), P109
- (4) Anon; IEEE Electronic Components and Technology Conference 1997, P7
- (5) Anon; Optical Engineering 1994, V33(11), P3547
- (6) Anon; Optical Engineering 1994, V33(11), P3552
- (7) Anon; Optical Engineering 1994, V33(11), P3578
- (8) Anon; Optical Engineering 1997, V33(11), P1095
- (9) Anon; SPIE 1995, V2383, P310
- (10) Basavanhally; US 5346583 1994
- (11) Brewer; US 5018164 1991
- (12) Wakabayashi; US 5316640 1994 CAPLUS

L27 ANSWER 24 OF 38 CAPLUS COPYRIGHT 2002 ACS

AN 1998:813611 CAPLUS

DN 130:89201

TI Production method of solder bumps for flip-chip mounting of **semiconductor** device , solder bumps themselves, and their analysis
 IN Huh, Nam-Joong; Kwon, Yong-Hwan; Park, Jong-Han
 PA Samsung Electronics Co., Ltd., S. Korea
 SO Jpn. Kokai Tokkyo Koho, 11 pp.
 CODEN: JKXXAF

DT Patent

LA Japanese

IC ICM H01L021-60

ICS H01L021-60; G01N021-88; H01L023-12

CC 76-3 (Electric Phenomena)

Section cross-reference(s): 79

FAN.CNT 1

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|----|-------------|------|----------|-----------------|----------|
| PI | JP 10335364 | A2 | 19981218 | JP 1998-47948 | 19980227 |
| | JP 3004959 | B2 | 20000131 | | |
| | US 6013572 | A | 20000111 | US 1998-63716 | 19980421 |

PRAI KR 1997-21022 A 19970527

AB The title method involves forming a boundary film on a **semiconductor** substrate by a photolithog. method, removing the photoresist used in the photolithog. method from the desired regions of the boundary film, successively plating the regions exposed by the removal with Ag and Sn, completely removing the photoresist, **etching** the boundary film exposed by the complete removal, and reflowing the platings to obtain an alloy having a desired compn. Specifically, the boundary film may comprise a layer of Ti, Cr, and/or Ti-W and a layer of Cu and/or Ni. A method for anal. involves cutting solder bumps to a desired size, and mounting on an epoxy resin to obtain a sample for, e.g., electron microprobe anal.

ST solder bump **semiconductor** device electron microprobe analysis; electroplating photolithog **etching** solder bump

IT **Etching**

Photolithography

(in prodn. and anal. of solder bumps for flip-chip mounting of **semiconductor** device)

IT Electrodeposition

(of silver and titanium in prodn. and anal. of solder bumps for flip-chip mounting of **semiconductor** device)

IT Electron microprobe analysis

(of solder bumps for flip-chip mounting of **semiconductor** device)

IT Solders

(silver and tin; prodn. and anal. of solder bumps for flip-chip mounting of **semiconductor** device)

IT Bump contacts

(solder; prodn. and anal. of solder bumps for flip-chip mounting of **semiconductor** device)

IT 7440-02-0, Nickel, processes 7440-32-6, Titanium, processes 7440-47-3, Chromium, processes 7440-50-8, Copper, processes 12642-02-3

RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)

(boundary film; in prodn. and anal. of solder bumps for flip-chip mounting of **semiconductor** device)

IT 67-56-1, Methanol, uses 7647-01-0, Hydrogen chloride, uses 7664-39-3,

Hydrogen fluoride, uses **7664-93-9**, Sulfuric acid, uses

7697-37-2, Nitric acid, uses 7722-84-1, Hydrogen peroxide, uses

RL: TEM (Technical or engineered material use); USES (Uses)

(**etchant** in prodn. and anal. of solder bumps for flip-chip mounting of **semiconductor** device)

IT **67-63-0**, Isopropanol, uses

RL: TEM (Technical or engineered material use); USES (Uses)

(for resist removal in prodn. and anal. of solder bumps for flip-chip mounting of **semiconductor** device)

IT 7440-22-4, Silver, processes 7440-31-5, Tin, processes

RL: ANT (Analyte); DEV (Device component use); PEP (Physical, engineering or chemical process); ANST (Analytical study); PROC (Process); USES (Uses)

(prodn. and anal. of solder bumps for flip-chip mounting of **semiconductor** device)

L27 ANSWER 25 OF 38 CAPLUS COPYRIGHT 2002 ACS

AN 1998:527177 CAPLUS

DN 129:163555

X TI Composition for cleaning and **etching** electronic display and substrate

IN Lee, Ke Won

PA S. Korea

SO PCT Int. Appl., 36 pp.

CODEN: PIXXD2

DT Patent

LA English

IC C09K013-04; C03C015-00; C23F001-24; H01L021-306; H01L021-465

CC 49-11 (Industrial Inorganic Chemicals)

Section cross-reference(s): 46, 56, 74, 76

FAN.CNT 2

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------|---|--------------------------|--------------------------|-----------------|----------|
| PI | WO 9831768 | A1 | 19980723 | WO 1998-KR11 | 19980121 |
| | W: CN, JP, US | | | | |
| | RW: AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE | | | | |
| | EP 892840 | A1 | 19990127 | EP 1998-901121 | 19980121 |
| | R: DE, FR, GB, NL | | | | |
| | CN 1216059 | A | 19990505 | CN 1998-800045 | 19980121 |
| | CN 1064986 | B | 20010425 | | |
| | JP 2000507304 | T2 | 20000613 | JP 1998-534157 | 19980121 |
| | US 6194365 | B1 | 20010227 | US 1998-142750 | 19980915 |
| PRAI | KR 1997-1539 | A | 19970121 | | |
| | KR 1997-53384 | A | 19971017 | | |
| | WO 1998-KR11 | W | 19980121 | | |
| AB | This invention relates to a compn. for cleaning and etching the surface in fabricating electronic displays and the substrates. Specifically this invention relates to a compn. to effectively remove the contaminants by cleaning, to remove any contaminants on the surface, and to etch SiO ₂ and Si substrate in the fabrication process of electronic displays, quartz devices, wafer, and semiconductor wafer. According to this invention, it is possible to clean and etch more efficiently and conveniently. Also the surface roughness is improved. Further the compn. of this invention can be made available in powder type for prep. a defined amt. of soln. It provides the conveniences in transportation, handling and storage. | | | | |
| ST | electronic display cleaning etching compn; quartz device cleaning etching compn; etching cleaning compn semiconductor wafer | | | | |
| IT | Cast alloys | | | | |
| | RL: DEV (Device component use); USES (Uses) (aluminum; compns. for cleaning and etching electronic display and substrate) | | | | |
| IT | Cleaning (chem.; compns. for cleaning and etching electronic display and substrate) | | | | |
| IT | Detergents | | | | |
| | Etching | | | | |
| | Lithography | | | | |
| | Optical imaging devices | | | | |
| | Semiconductor materials | | | | |
| | Surfactants (compns. for cleaning and etching electronic display and substrate) | | | | |
| IT | Fluorides, uses | | | | |
| | Sulfonates | | | | |
| | Sulfonic acids, uses | | | | |
| | RL: NUU (Other use, unclassified); USES (Uses) (compns. for cleaning and etching electronic display and substrate) | | | | |
| IT | Hydrocarbons, uses | | | | |
| | RL: MOA (Modifier or additive use); USES (Uses) (fluoro; compns. for cleaning and etching electronic display and substrate) | | | | |
| IT | 7429-90-5, Aluminum, uses | 7440-21-3, Silicon, uses | 14808-60-7, Quartz, uses | | |
| | RL: DEV (Device component use); USES (Uses) (compns. for cleaning and etching electronic display and substrate) | | | | |
| IT | 7631-86-9, Silica, uses | | | | |

RL: MOA (Modifier or additive use); USES (Uses)
(compns. for cleaning and **etching** electronic display and substrate)

IT 62-76-0, Sodium oxalate 63-74-1, Sulfonyl amide 64-19-7, Acetic acid, uses 67-63-0, 2-Propanol, uses 97-05-2, Sulfosalicylic acid 144-62-7, Oxalic acid, uses 831-54-9, Sodium sulfosalicylate 1333-83-1, Sodium bifluoride 1341-49-7, Ammonium bifluoride 5329-14-6, Sulfamic acid 6009-70-7, Ammonium oxalate monohydrate 6100-20-5 6484-52-2, Ammonium nitrate, uses 6487-48-5, Potassium oxalate monohydrate 7631-99-4, Sodium nitrate, uses **7664-38-2**, Phosphoric acid, uses **7664-93-9**, Sulfuric acid, uses 7681-49-4, Sodium fluoride, uses 7727-21-1, Potassium persulfate 7727-54-0, Ammonium persulfate 7757-79-1, Potassium nitrate, uses 7773-06-0, Ammonium sulfamate 7775-27-1, Sodium persulfate 7787-32-8, Barium fluoride 7789-23-3, Potassium fluoride 7789-29-9, Potassium bifluoride 10022-31-8, Barium nitrate 12125-01-8, Ammonium fluoride 13826-83-0, Ammonium fluoroborate

RL: NUU (Other use, unclassified); USES (Uses)
(compns. for cleaning and **etching** electronic display and substrate)

X L27 ANSWER 26 OF 38 CAPLUS COPYRIGHT 2002 ACS
AN 1997:803263 CAPLUS
DN 128:42188
TI A novel surface preparation and post-**etch** removal technique for InGaAs sidewalls
AU Tabatabaei, S. A.; Porkolab, G. A.; Agarwala, S.; Johnson, F. G.; Merritt, S. A.; King, O.; Dagenais, M.; Chen, Y. J.; Stone, D. R.
CS Joint Program for Advanced Electronic Materials, Electric Engineering Department, Univ. of Maryland, College Park, MD, 20742, USA
SO Materials Research Society Symposium Proceedings (1997), 477(Science and Technology of Semiconductor Surface Preparation), 317-321
CODEN: MRSPDH; ISSN: 0272-9172
PB Materials Research Society
DT Journal
LA English
CC 76-3 (Electric Phenomena)
Section cross-reference(s): 73
AB This paper describes in detail a surface prep. and post-**etch** removal technique developed for InGaAs sidewalls. It illustrates the results demonstrating the effect of sidewall post-**etch**, surface prep., and surface passivation on the performance of high speed InGaAs detectors. Dark c.d. for circular diodes with a diam. size varying between 10 and 100 .mu.m was measured at a reverse bias voltage of -5 V. The effectiveness of various surface prep. techniques was studied by measuring the immediate improvement in dark c.d., as well as its long-term stability. The benefits of this new technique compared to other techniques we have investigated include improved device characteristics, long-term stability, as well as a much less crit. process to achieve optimum surface properties.
ST gallium indium arsenide sidewall photodiode; **etching** gallium indium arsenide detector
IT Sputtering
(**etching**, ion-beam; novel surface prep. and post-**etch** removal technique for InGaAs sidewalls)
IT Sputtering
(**etching**, reactive; novel surface prep. and post-**etch** removal technique for InGaAs sidewalls)
IT Controlled atmospheres
(nitrogen; novel surface prep. and post-**etch** removal technique for InGaAs sidewalls)
IT **Etching**
Optical detectors

Photodiodes
Semiconductor device fabrication
 (novel surface prepn. and post-**etch** removal technique for
 InGaAs sidewalls)

IT Cleaning
 (plasma, oxygen; novel surface prepn. and post-**etch** removal
 technique for InGaAs sidewalls)

IT **Etching**
 (sputter, ion-beam; novel surface prepn. and post-**etch**
 removal technique for InGaAs sidewalls)

IT **Etching**
 (sputter, reactive; novel surface prepn. and post-**etch**
 removal technique for InGaAs sidewalls)

IT 7727-37-9, Nitrogen, uses
 RL: NUU (Other use, unclassified); USES (Uses)
 (annealing atm.; novel surface prepn. and post-**etch** removal
 technique for InGaAs sidewalls)

IT 67-63-0, Isopropanol, uses 75-59-2, Tetramethylammonium
 hydroxide 7647-01-0, Hydrochloric acid, uses 7664-38-2,
 Phosphoric acid, uses 7664-93-9, Sulfuric acid, uses
 7722-84-1, Hydrogen peroxide (H2O2), uses
 RL: NUU (Other use, unclassified); USES (Uses)
 (**etchant**; novel surface prepn. and post-**etch**
 removal technique for InGaAs sidewalls)

IT 7440-06-4, Platinum, processes 7440-32-6, Titanium, processes
 RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical
 process); PROC (Process); USES (Uses)
 (mask; novel surface prepn. and post-**etch** removal technique
 for InGaAs sidewalls)

IT 199745-60-3, PI 2711
 RL: NUU (Other use, unclassified); USES (Uses)
 (neg. photosensitive polyimide; novel surface prepn. and post-
etch removal technique for InGaAs sidewalls)

IT 106070-25-1, Gallium indium arsenide
 RL: DEV (Device component use); PEP (Physical, engineering or chemical
 process); PROC (Process); USES (Uses)
 (novel surface prepn. and post-**etch** removal technique for
 InGaAs sidewalls)

IT 74-82-8, Methane, uses 1333-74-0, Hydrogen, uses 7440-37-1, Argon,
 uses
 RL: NUU (Other use, unclassified); USES (Uses)
 (novel surface prepn. and post-**etch** removal technique for
 InGaAs sidewalls)

L27 ANSWER 27 OF 38 CAPLUS COPYRIGHT 2002 ACS
 AN 1997:315689 CAPLUS
 DN 126:337670
 TI Making a high-voltage, high-speed gallium arsenide power Schottky diode
 IN Ashkinazi, German; Meyler, Boris; Nathan, Menachem; Zolotarevski, Leonid;
 Zolotarevski, Olga
 PA Ramot University Authority for Applied Research & Industrial Development,
 Israel
 SO U.S., 7 pp., Cont. of U. S. Ser. No. 24,965, abandoned.
 CODEN: USXXAM
 DT Patent
 LA English
 IC ICM H01L021-265
 NCL 438571000
 CC 76-3 (Electric Phenomena)
 FAN.CNT 1

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---------------|-------|-----------------|-----------------|----------|
| ----- | ----- | ----- | ----- | ----- |
| PI US 5622877 | A | <u>19970422</u> | US 1994-326893 | 19941021 |

PRAI US 1993-24965

19930302

AB A GaAs power Schottky diode with a chem. deposited Ni barrier has reverse breakdown voltage 140 V; forward voltage drop at 50 A/cm² 0.7 V at 23.degree., 0.5 V at 150.degree., and 0.3 V at 250.degree.; reverse leakage c.d. at -50 V 0.1 .mu.A/cm² at 23.degree. and 1 mA/cm² at 150.degree.. The diode is made by chem. depositing a Ni barrier electrode on a **semiconductor** which includes GaAs and then **etching** the device to create side portions which are treated and protected to create the Schottky device.

ST gallium arsenide power Schottky diode prepn

IT Cleaning

Etching
(in making high-voltage, high-speed gallium arsenide power Schottky diodes)

IT Schottky diodes
(making high-voltage, high-speed gallium arsenide power Schottky diodes)

IT **7664-93-9**, Sulfuric acid, processes
RL: PEP (Physical, engineering or chemical process); PROC (Process)
(**etchant**; in making high-voltage, high-speed gallium arsenide power Schottky diodes)

IT 1336-21-6, Ammonium hydroxide ((NH₄)(OH))
RL: PEP (Physical, engineering or chemical process); PROC (Process)
(in cleaning for nickel deposition in making high-voltage, high-speed gallium arsenide power Schottky diodes)

IT 1303-00-0, Gallium arsenide, processes
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(making high-voltage, high-speed gallium arsenide power Schottky diodes)

IT 7440-02-0, Nickel, processes
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(making high-voltage, high-speed gallium arsenide power Schottky diodes contg.)

IT 56-23-5, Carbon tetrachloride, processes 67-56-1, Methanol, processes
67-63-0, Isopropyl alcohol, processes 67-64-1, Acetone, processes
RL: PEP (Physical, engineering or chemical process); PROC (Process)
(washing by; in cleaning for nickel deposition in making high-voltage, high-speed gallium arsenide power Schottky diodes)

L27 ANSWER 28 OF 38 CAPLUS COPYRIGHT 2002 ACS
AN 1997:12914 CAPLUS
DN 126:137541

TI **Etch**-mask of pyrolytic-photoresist thin-film for self-aligned fabrication of smooth and deep faceted three-dimensional microstructures

AU Porkolab, G. A.; Hsu, Shih-Hsiang; Hryniwicz, John V.; Lin, Wenhua; Chen, Y. J.; Agarwala, Sambhu; Johnson, F. G.; King, Oliver; Dagenais, M.; Stone, D. R.

CS Dep. of Computer Science and Electrical Engineering, University of Maryland Baltimore County, Baltimore, MD, 21228, USA

SO Journal of Vacuum Science & Technology, B: Microelectronics and Nanometer Structures (1996), 14(6), 3650-3653
CODEN: JVTBD9; ISSN: 0734-211X

PB American Institute of Physics

DT Journal

LA English

CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)

AB **Etch**-mask thin-film material that is particulate-free and topog. smooth has been created from a std. photoresist spun onto std. **semiconductor** substrates such as gallium arsenide, indium

phosphide, and silicon, and then pyrolyzed by exposing to a temp. of 300.degree.C in air atm. for 1 min on a std. lab. hot-plate. The resulting pyrolytic-photoresist thin-film is chem. inert to many std. org. solvents including the solvent of photoresist itself and to many inorg. reagents used in **semiconductor** processing. Therefore the pyrolytic-photoresist can be patterned by sulfur hexafluoride reactive ion **etching** via a std. photoresist mask. Upon stripping the std. photoresist in a mixt. of 1:1/acetone:developer agitated ultrasonically, the remaining patterned pyrolytic-photoresist performs as an excellent **etch**-mask in chem. assisted ion beam **etching** and reactive ion **etching** systems. Thus it can be a key material in the multilayer masking technique used to sculpt self-aligned three-dimensional microstructures with deep and smooth facets which are needed for example for photonic integrated circuits and micro-electro-mech. systems.

ST pyrolytic photoresist **etch** photomask plasma **etching**

IT **Etching**

Photomasks (lithographic masks)

Photoresists

Thermal decomposition

(pyrolytic resist as **etch**-mask in plasma-based
etching systems)

IT 75-59-2, Tetramethyl ammonium hydroxide 186467-52-7, OCG-OPD 4262

RL: PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(developer; pyrolytic resist as **etch**-mask in plasma-based
etching systems)

IT 1336-21-6, Ammonium hydroxide 2551-62-4, Sulfur hexafluoride

7647-01-0, Hydrochloric acid, processes 7664-38-2, Phosphoric acid, processes 7664-93-9, Sulfuric acid, processes 7697-37-2, Nitric acid, processes 7722-84-1, Hydrogen peroxide, processes
RL: PEP (Physical, engineering or chemical process); PROC (Process)
(etchant; pyrolytic resist as **etch**-mask in plasma-based
etching systems)

IT 1303-00-0, Gallium arsenide, processes 7440-21-3, Silicon, processes
22398-80-7, Indium phosphide, processes

RL: PEP (Physical, engineering or chemical process); PROC (Process)
(pyrolytic resist as **etch**-mask in plasma-based
etching systems)

IT 872-50-4, N-Methyl-2-pyrrolidone, processes

RL: PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(resist stripper, Microposit 2001; pyrolytic resist as **etch**-mask in plasma-based
etching systems)

IT 186467-51-6, OCG-OIR 897-21i

RL: PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(resist; pyrolytic resist as **etch**-mask in plasma-based
etching systems)

IT 67-56-1, Methanol, uses 67-63-0, Isopropanol, uses 67-64-1,

Acetone, uses 71-55-6, 1,1,1-Trichloroethane

RL: NUU (Other use, unclassified); USES (Uses)

(solvent; pyrolytic resist as **etch**-mask in plasma-based
etching systems)

7 L27 ANSWER 29 OF 38 CAPLUS COPYRIGHT 2002 ACS

AN 1996:15455 CAPLUS

DN 124:43338

TI Cleaning of **semiconductor** wafers

IN Mori, Tadashi; Oosako, Takashi

PA Oki Electric Ind Co Ltd, Japan

SO Jpn. Kokai Tokkyo Koho, 6 pp.

CODEN: JKXXAF

DT Patent
 LA Japanese
 IC ICM H01L021-306
 ICS H01L021-304
 ICA B08B003-00
 CC 76-3 (Electric Phenomena)
 Section cross-reference(s): 72
 FAN.CNT 1

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|-----------|---|------|----------|-----------------|----------|
| PI | JP 07263402 | A2 | 19951013 | JP 1994-56306 | 19940325 |
| AB | The process typically comprises the steps of: forming a thermal oxide and a poly-Si layer on a Si wafer; washing the coated wafer with a soln. contg. <u>H₂SO₄</u> and H ₂ O ₂ ; removing the oxide layer and then etching the poly-Si layer using a 1% HF soln., thereby forming a hydrophilic surface (H ₂ O-bead contact angle > 60.degree.); and washing with DI water, exposing to iso-Pr alc. vapor and drying the surface. | | | | |
| ST | silicon wafer surface ultracleaning process | | | | |
| IT | Cleaning | | | | |
| | Semiconductor materials
(cleaning of semiconductor wafers) | | | | |
| IT | 67-63-0, Isopropyl alcohol, uses 7664-39-3, <u>Hydrogen</u> fluoride, uses 7664-93-9, <u>Sulfuric</u> acid, uses 7722-84-1, Hydrogen peroxide, uses
RL: ARG (Analytical reagent use); DEV (Device component use); ANST (Analytical study); USES (Uses)
(cleaning of semiconductor wafers) | | | | |
| IT | 7440-21-3, Silicon, uses
RL: DEV (Device component use); USES (Uses)
(cleaning of semiconductor wafers) | | | | |
| L27 | ANSWER 30 OF 38 CAPLUS COPYRIGHT 2002 ACS | | | | |
| AN | 1995:490358 CAPLUS | | | | |
| DN | 122:228726 | | | | |
| TI | Rinsing solutions for resist removal in manufacture of semiconductor devices and its | | | | |
| IN | Goto, Hideto; Myazaki, Masao; Mori, Kyoto | | | | |
| PA | Texas Instruments Japan, Japan; Kanto Kagaku | | | | |
| SO | Jpn. Kokai Tokkyo Koho, 6 pp.
CODEN: JKXXAF | | | | |
| DT | Patent | | | | |
| LA | Japanese | | | | |
| IC | ICM H01L021-304
ICS C11D017-00; C23G005-032; H05K003-26 | | | | |
| CC | 76-3 (Electric Phenomena) | | | | |
| FAN.CNT 1 | | | | | |
| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
| PI | JP 07037846 | A2 | 19950207 | JP 1993-224895 | 19930722 |
| AB | The rinsing solns. contain water-sol. monohydric alcs. and acids. The manufg. process involves the following steps: (1) forming a C-contg. Al conductive layer on a semiconductor substrate, (2) etching the conductive layer with a resist mask, (3) removing the resist with alkali, and (4) rinsing with the soln. The rinsing soln. is noncorrosive to Al-Si-Cu wiring. | | | | |
| ST | noncorrosive rinse soln resist semiconductor ; acid alc rinsing semiconductor device | | | | |
| IT | Semiconductor devices
(noncorrosive rinsing soln. for alk. resist removal in semiconductor device manuf.) | | | | |
| IT | 50-70-4, <u>D-Sorbitol</u> , uses 64-17-5, Ethanol, uses 64-19-7, Acetic acid, uses 65-85-0, Benzoic acid, uses 67-56-1, Methanol, uses 67-63-0, Isopropyl alcohol, uses 144-62-7, Oxalic acid, uses | | | | |

revisit

7664-93-9, Sulfuric acid, uses 7697-37-2, Nitric acid, uses 27176-87-0, Dodecylbenzenesulfonic acid
RL: TEM (Technical or engineered material use); USES (Uses)
(noncorrosive rinsing soln. for alk. resist removal in **semiconductor** device manuf.)

IT 37254-60-7
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(wiring; noncorrosive rinsing soln. for alk. resist removal in **semiconductor** device manuf.)

L27 ANSWER 31 OF 38 CAPLUS COPYRIGHT 2002 ACS
AN 1994:470998 CAPLUS
DN 121:70998
TI A new cleaning concept for particle and metal removal on Si surfaces
AU Meuris, M.; Verhaverbeke, S.; Mertens, P. W.; Schmidt, H. F.; Rotondaro, A. L. P.; Heyns, M. M.; Philipossian, A.
CS IMEC, Louvain, 3001, Belg.
SO Proc. - Electrochem. Soc. (1994), 94-7(PROCEEDINGS OF THE THIRD INTERNATIONAL SYMPOSIUM ON CLEANING TECHNOLOGY IN SEMICONDUCTOR DEVICE MANUFACTURING, 1993), 15-25
CODEN: PESODO; ISSN: 0161-6374
DT Journal
LA English
CC 76-3 (Electric Phenomena)
Section cross-reference(s): 66, 67
AB In this study the IMEC Clean Concept will be proposed. It is a simple two-step cleaning, based on a oxidn. step and an oxide removal step. It is demonstrated that this clean performs excellent regarding the particle and metal removal efficiencies, combined with a minimal surface roughness. Elec. breakdown measurements show also very good performance of the gate-oxide integrity after this clean.
ST silicon surface processing IMEC Clean Concept; cleaning silicon wafer
particle metal removal
IT **Semiconductor** devices
(gate-oxide integrity in, cleaning process effect on)
IT Dielectric strength
(of gate oxide, on silicon after IMEC Clean Concept processing)
IT **Etching**
(of silicon, during IMEC Clean Concept processing)
IT Particles
(removal of, from silicon wafers, IMEC Clean Concept for)
IT 7631-86-9, Silica, uses
RL: USES (Uses)
(gate, cleaning technol. for improved)
IT 7647-01-0, Hydrogen chloride, uses 7664-93-9, Sulfuric acid, uses
RL: USES (Uses)
(surface cleaning of silicon by hydrogen peroxide mixts. with)
IT 7722-84-1, Hydrogen peroxide, uses
RL: USES (Uses)
(surface cleaning of silicon by sulfuric acid mixts. with)
IT 7440-21-3, Silicon, uses
RL: USES (Uses)
(surface cleaning of, IMEC Clean Concept for good gate-oxide integrity)
IT **67-63-0**, Isopropanol, uses
RL: USES (Uses)
(surface treatment of silicon by hydrofluoric acid solns. in aq.)
IT 7664-39-3, Hydrogen fluoride, uses
RL: USES (Uses)
(surface treatment of silicon by isopropanol solns. of)

L27 ANSWER 32 OF 38 CAPLUS COPYRIGHT 2002 ACS

AN 1986:635553 CAPLUS
 DN 105:235553
 TI **Etching** solution for LED fabrication
 IN Hayashi, Junji
 PA NEC Corp., Japan
 SO Jpn. Kokai Tokkyo Koho, 4 pp.
 CODEN: JKXXAF
 DT Patent
 LA Japanese
 IC H01L021-306
 CC 73-12 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
 Section cross-reference(s): 76

FAN.CNT 1

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|----|--|------|----------|-----------------|----------|
| PI | JP 61077327 | A2 | 19860419 | JP 1984-198037 | 19840921 |
| AB | An etching soln. for use in the fabrication of an InGaAsP-InP surface-emitting LED is a mixt. of Br, H ₃ PO ₄ , and MeOH or EtOH, the ratio (the basis not given) of H ₃ PO ₄ /alc. being 0.2-1.0. Smooth, circular mesa etching is possible. | | | | |
| ST | etching soln semiconductor LED | | | | |
| IT | Electroluminescent devices
(indium gallium arsenide phosphide-indium phosphide, etching solns. for manuf. of) | | | | |
| IT | Etching
(of semiconductors, by bromine-phosphoric acid-alc. mixt., for LEDs) | | | | |
| IT | 22398-80-7P, uses and miscellaneous
RL: IMF (Industrial manufacture); PREP (Preparation)
(LEDs from indium gallium arsenide phosphide and, etching solns. for manuf. of) | | | | |
| IT | 1303-00-0DP, solid solns. with Group IIIA pnictides 1303-11-3DP, solid solns. with Group IIIA pnictides 12063-98-8DP, solid solns. with Group IIIA pnictides 22398-80-7DP, solid solns. with Group IIIA pnictides
RL: IMF (Industrial manufacture); PREP (Preparation)
(LEDs from indium phosphide and, etching solns. for manuf. of) | | | | |
| IT | 7726-95-6, uses and miscellaneous
RL: USES (Uses)
(semiconductor etching mixt. contg. phosphoric acid and alc. and, for LEDs) | | | | |
| IT | 7664-38-2, uses and miscellaneous
RL: USES (Uses)
(semiconductor etching soln. contg. bromine and alc. and, for LEDs) | | | | |
| IT | 64-17-5, uses and miscellaneous 67-56-1, uses and miscellaneous
RL: USES (Uses)
(semiconductor etching soln. contg. phosphoric acid and bromine and, for LEDs) | | | | |

L27 ANSWER 33 OF 38 CAPLUS COPYRIGHT 2002 ACS
 AN 1984:582216 CAPLUS
 DN 101:182216
 TI Compound **semiconductor** devices
 PA Fujitsu Ltd., Japan
 SO Jpn. Kokai Tokkyo Koho, 4 pp.
 CODEN: JKXXAF
 DT Patent
 LA Japanese
 IC H01L021-265; H01L021-22; H01L029-80
 CC 76-3 (Electric Phenomena)
 Section cross-reference(s): 75

FAN.CNT 1

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|-------------|--|----------|----------|-----------------|----------|
| PI | JP 59094815 | A2 | 19840531 | JP 1982-204819 | 19821122 |
| JP 02003297 | B4 | 19900123 | | | |
| AB | Compd. semiconductors device substrates with low defect concns. or undesired dopant effects are prep'd. by cleaning and etching the surface, annealing, etching , and doping. Thus, GaAs was cleaned in a solvent such as CCl ₂ :CHCl ₁ , acetone, and EtOH before heating and doping. | | | | |
| ST | compd semiconductor cleaning etching annealing doping; gallium arsenide cleaning doping | | | | |
| IT | Semiconductor devices
(etching and annealing in fabrication of, of compd. semiconductors) | | | | |
| IT | Annealing
(in compd. semiconductor device fabrication) | | | | |
| IT | Cleaning
Etching
(of compd. semiconductors in device fabrication) | | | | |
| IT | 64-17-5 , uses and miscellaneous 64-19-7, uses and miscellaneous 79-01-6, uses and miscellaneous 7664-93-9 , uses and miscellaneous 7722-84-1, uses and miscellaneous
RL: USES (Uses)
(etchant contg., for gallium arsenide) | | | | |
| IT | 1303-00-0, uses and miscellaneous
RL: USES (Uses)
(semiconductor devices from cleaning and annealing of) | | | | |

L27 ANSWER 34 OF 38 CAPLUS COPYRIGHT 2002 ACS
 AN 1984:482650 CAPLUS
 DN 101:82650
 TI Cleaning the surfaces of **semiconductor** plates
 IN Lapcik, Lubomir; Zelenay, Emil; Skyrta, Jan
 PA Czech.
 SO Czech., 2 pp.
 CODEN: CZXXA9
 DT Patent
 LA Slovak
 IC H01L021-02
 CC 76-3 (Electric Phenomena)

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|----|--|------|----------|-----------------|----------|
| PI | CS 206272 | B | 19810630 | CS 1979-1754 | 19790316 |
| AB | Cleaning of plates before diffusion treatment, photolithog., or vapor coating comprises washing with a H ₂ SO ₄ -H ₂ O ₂ mixt. and deionized water, etching with aq. <u>HF</u> , rinsing with water, and centrifuging with consecutive spraying with water, MeOH, EtOH, Me ₂ CHOH, and Me ₂ CO or MeCOEt. surface cleaning semiconductor plate | | | | |
| ST | Semiconductor materials
(cleaning of surfaces of plates of) | | | | |
| IT | Cleaning
(of semiconductor plate surfaces) | | | | |
| IT | 64-17-5 , uses and miscellaneous 67-56-1, uses and miscellaneous 67-63-0, uses and miscellaneous 67-64-1, uses and miscellaneous 78-93-3, uses and miscellaneous 7664-39-3, uses and miscellaneous 7664-93-9 , uses and miscellaneous 7722-84-1, uses and miscellaneous
RL: USES (Uses)
(in cleaning of semiconductor plate surfaces) | | | | |

L27 ANSWER 35 OF 38 CAPLUS COPYRIGHT 2002 ACS
 AN 1984:59614 CAPLUS

DN 100:59614
 TI Positive resist removal solution
 PA Toshiba Corp., Japan
 SO Jpn. Kokai Tokkyo Koho, 4 pp.
 CODEN: JKXXAF
 DT Patent
 LA Japanese
 IC H01L021-306
 CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
 Section cross-reference(s): 76
 FAN.CNT 1

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|----|---|--|----------|-----------------|----------|
| PI | JP 58168239 | A2 | 19831004 | JP 1982-52000 | 19820330 |
| AB | Boiling strong acid soln. contg. H ₂ SO ₄ and H ₂ O ₂ is used to remove patterned, etched , and EtOH-soln. treated pos. photoresist from the oxide layer coated on a Si wafer, the EtOH treatment ensuring complete removal. | | | | |
| ST | pos photoresist removal silicon wafer; ethanol pos photoresist removal | | | | |
| IT | Semiconductor devices
(fabrication of, ethanol pretreatment in removal of pos. photoresist from silicon wafer in relation to) | | | | |
| IT | Alcohols, uses and miscellaneous | | | | |
| | RL: USES (Uses) | (pos. photoresist removal from silicon wafer by pretreatment with soln. contg.) | | | |
| IT | Resists
(photo-, pos., removal of patterned, ethanol pretreatment in) | | | | |
| IT | 64-17-5 , uses and miscellaneous 67-56-1, uses and miscellaneous
71-36-3 , uses and miscellaneous | | | | |
| | RL: USES (Uses) | (pos. photoresist removal from silicon wafer by pretreatment with soln. contg.) | | | |
| IT | 7664-93-9 , uses and miscellaneous 7722-84-1, uses and miscellaneous | | | | |
| | RL: USES (Uses) | (pos. photoresist removal from silicon wafer with soln. contg., ethanol pretreatment in) | | | |
| IT | 7440-21-3 , properties
RL: PRP (Properties)
(pos. photoresist removal from wafer of, ethanol pretreatment in) | | | | |

L27 ANSWER 36 OF 38 CAPLUS COPYRIGHT 2002 ACS
 AN 1983:514577 CAPLUS
 DN 99:114577
 TI Doping a **semiconductor** substrate
 IN Thomas, Ian Melville; Tillman, James Joseph
 PA Owens-Illinois, Inc. , USA
 SO Ger. Offen., 42 pp.
 CODEN: GWXXBX
 DT Patent
 LA German
 IC C30B031-02; H01L021-225
 CC 76-3 (Electric Phenomena)

FAN.CNT 1

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|----|-------------|------|----------|-----------------|----------|
| PI | DE 3247173 | A1 | 19830804 | DE 1982-3247173 | 19821221 |
| | DE 3247173 | C2 | 19861030 | | |
| | GB 2114365 | A1 | 19830817 | GB 1982-34629 | 19821203 |
| | GB 2114365 | B2 | 19860806 | | |
| | JP 58131730 | A2 | 19830805 | JP 1983-6770 | 19830121 |

| | | | | |
|---|--|----------|----------------|----------|
| FR 2520554 | A1 | 19830729 | FR 1983-1258 | 19830127 |
| FR 2520554 | B1 | 19870227 | | |
| US 4619719 | A | 19861028 | US 1986-822942 | 19860127 |
| PRAI US 1982-343667 | | 19820128 | | |
| US 1984-604713 | | 19840427 | | |
| AB | A method for doping semiconductor substrates consists of (1) reacting Si(OR) ₄ (R = either a C1-6 alkyl or R ₁ OC ₂ H ₄ - where R ₁ = C1-6 alkyl) with a sub-stoichiometric amt. of H ₂ O in the presence of hydrolysis catalyst to give a low mol.-wt. polyorganosiloxane, (2) dissolving the polyorganosiloxane with a dopant source, (3) coating the substrate with this soln., (4) converting the coating to a glass, and (4) heating to diffuse the dopant into the semiconductor . Thus, Si(OEt) ₄ 55.5, isoProH 100, H ₂ O 6.1, and an As acid soln. were heated with refluxing for 1 h and cooled, a Si wafer was coated with this soln. by spinning and drying, the wafer was heated at 1000-1250.degree. for .gt; or = 15 min, and the wafer was heated in an Ar-O ₂ atm. and the glass etched off with 5% aq. HF. | | | |
| ST | polyorganosiloxane doping source semiconductor ; arsenic doping silicon polysiloxane glass | | | |
| IT | Semiconductor materials
(doping sources for, from polysiloxanes) | | | |
| IT | Siloxanes and Silicones, uses and miscellaneous | | | |
| RL: USES (Uses) | (doping sources from, for semiconductors) | | | |
| IT | Glass, oxide | | | |
| RL: TEM (Technical or engineered material use); USES (Uses) | (from polysiloxane coatings, as doping sources for semiconductors) | | | |
| IT | Siloxanes and Silicones | | | |
| IT | Siloxanes and Silicones, uses and miscellaneous | | | |
| RL: PREP (Preparation) | (in prepn. of polysiloxane doping sources for semiconductors) | | | |
| IT | 7664-38-2 , uses and miscellaneous | | | |
| RL: USES (Uses) | (as phosphorus doping source, for silicon) | | | |
| IT | 5314-55-6 | | | |
| RL: USES (Uses) | (boron doping source from, for silicon) | | | |
| IT | 1327-53-3 | | | |
| RL: USES (Uses) | (dopant source from, for silicon) | | | |
| IT | 7440-38-2, uses and miscellaneous | | | |
| RL: USES (Uses) | (doping of silicon by, from polysiloxane glass source) | | | |
| IT | 7440-21-3, uses and miscellaneous | | | |
| RL: PEP (Physical, engineering or chemical process); PROC (Process) | (doping of, with polysiloxane doping sources) | | | |
| IT | 7440-42-8, uses and miscellaneous 7723-14-0, uses and miscellaneous | | | |
| RL: USES (Uses) | (doping source of polysiloxanes for, for silicon) | | | |
| IT | 67-63-0 , uses and miscellaneous 7647-01-0, uses and miscellaneous 7697-37-2, uses and miscellaneous | | | |
| RL: USES (Uses) | (in arsenic doping source prep. for silicon) | | | |
| IT | 78-10-4 | | | |
| RL: USES (Uses) | (in doping source prep. for silicon) | | | |

L27 ANSWER 37 OF 38 CAPLUS COPYRIGHT 2002 ACS

AN 1982:537340 CAPLUS

DN 97:137340

TI Circular cavities for optical fibers formed by chemical **etching** in gallium arsenide, gallium phosphide, and cadmium mercury telluride single-crystal chips.

IN Marie, Claude
 PA Radiotechnique-Compelec (RTC), Fr.
 SO Fr. Demande, 10 pp.
 CODEN: FRXXBL
 DT Patent
 LA French
 IC C23F001-02; C09K013-00; G03F007-00; H01L031-18; H01L033-00
 CC 76-3 (Electric Phenomena)
 FAN.CNT 1

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|----|--|------|----------|-----------------|----------|
| PI | FR 2486104 | A1 | 19820108 | FR 1980-15001 | 19800704 |
| AB | For prep. essentially circular cavities (e.g., diam. 200-300 .mu.m, depth .apprx.100 .mu.m) in single-crystal fcc. semiconductor chips of GaAs (I), GaP (II), or CdHgTe (III) for the insertion of optical fibers (assocd. with LED's), a method is described, in which: (a) a Si ₃ N ₄ mask [M] (thickness t = 1000-2000 .ANG.) is deposited on a {100} crystallog. surface [e.g., the (100) plane] of a rectangular chip [t .apprxeq. 150 .mu.m, and having its pairs of parallel sides in the (1) (011) and (0.hivin.1.hivin.1) cleavage planes and (2) (01.hivin.1) and (0.hivin.11) cleavage planes, resp.]; (b) a window [W] is photoengraved in M having the form of a regular octagon, of which the 1st and 2nd consecutive sides make an angle of 22.degree.30' with respect to the [011] crystallog. direction which is parallel to the sides in the (011) and (0.hivin.1.hivin.1) cleavage planes; and (c) chem. etching is done in W to give a circular cavity, where the etchant is: NH ₄ OH + H ₂ O ₂ (pH = 8.4), Br ₂ + MeOH + EtOH, or H ₂ SO ₄ + H ₂ O ₂ for I; HCl + fuming HNO ₃ for II; and Br ₂ + HBr for III. | | | | |
| ST | optical fiber cavity semiconductor etching ; phosphide gallium chem etching ; arsenide gallium chem etching ; gallium pnictide chem etching ; cadmium mercury telluride chem etching ; silicon nitride mask etching
semiconductor ; hydrogen peroxide etching gallium arsenide; ammonium hydroxide peroxide etching arsenide; sulfuric acid peroxide etching arsenide; hydrochloric nitric acid etching phosphide; LED optical fiber cavity etching ; bromine etching arsenide telluride; hydrobromic acid bromine etching telluride | | | | |
| IT | Fiber optics
(etching of cavities for, in semiconductor chips) | | | | |
| IT | Semiconductor materials
(etching of circular cavities in chips of, for optical fibers) | | | | |
| IT | Etching
(of circular cavities in semiconductor chips, for optical fibers) | | | | |
| IT | 64-17-5, reactions 67-56-1, reactions 1336-21-6 7647-01-0, reactions 7664-93-9, reactions 7697-37-2, reactions 7722-84-1, reactions 7726-95-6, reactions 10035-10-6, reactions
RL: RCT (Reactant)
(etching by, of circular cavities in semiconductor chips, for optical fibers) | | | | |
| IT | 1303-00-0, reactions 1306-25-8D, solid soln. with mercury telluride 12063-98-8, reactions 12068-90-5D, solid soln. with cadmium telluride
RL: RCT (Reactant)
(etching of circular cavities in chips of, for optical fibers) | | | | |
| IT | 12033-89-5, uses and miscellaneous
RL: USES (Uses)
(masks from, for etching of circular cavities in semiconductor chips, for optical fibers) | | | | |

AN 1982:191428 CAPLUS
DN 96:191428
TI Composition and electron stress effects in silicon nitride thin films made by thermal growth and chemical **etching** of LPCVD MNOS structures as studied by x-ray photoelectron spectroscopy (XPS)
AU Wurzbach, J. A.; Grunthaner, F. J.; Maserjian, J.
CS Jet Propulsion Lab., California Inst. Technol., Pasadena, CA, 91109, USA
SO J. Vac. Sci. Technol. (1982), 20(4), 962-5
CODEN: JVSTAL; ISSN: 0022-5355
DT Journal
LA English
CC 76-3 (Electric Phenomena)
AB XPS was used in conjunction with stopped-flow chem. **etching** and angular resoln. to obtain depth profiles and interface structures of native oxide LPCVD (low-pressure chem.-vapor-deposition) MNOS structures and thermally grown Si₃N₄ films. Depth profiling of LPCVD samples required stopped-flow **etching** with HF/H₃PO₄/EtOH (15:10:60). A uniform compn. of nearly stoichiometric Si₃N₄ was found throughout the bulk; SiO₂ was found intact at the interface along with a sharp Si₃N₄/SiO₂ interface width of 8-10 .ANG.. Another LPCVD sample was **etched** to .apprx. 30 .ANG. and subjected to a low-energy electron flux in an XPS investigation of degrdn. mechanisms of MNOS devices; cleavage of Si-H bonds was obsd. Angle-resolved XPS on thin, thermally grown films showed a compositional gradient ranging from a high concn. of oxide at the surface to nearly pure Si₃N₄ at the interface. The results are related to interface-state formation and mechanisms of MNOS memory degrdn. and film growth.
ST MNOS interface structure; silicon nitride interface MNOS; energy interface state MNOS; XPS MNOS structure; depth profile MNOS structure; **etching** MNOS structure
IT **Semiconductor** devices
 (MNOS, depth profiles and interface structures of native-oxide low-pressure chem.-vapor-deposition structures of, XPS detn. of)
IT Energy level, surface
 (interface, of MNOS structures, XPS in relation to)
IT **Etching**
 (stopped-flow, in depth profiling of MNOS structures)
IT 12033-89-5, properties
RL: PRP (Properties)
 (depth profiles and interface structures of, in MNOS structures, XPS detn. of)
IT **64-17-5**, uses and miscellaneous
RL: USES (Uses)
 (in stopped-flow **etching** of MNOS structures, in depth profiling)
IT **7664-38-2**, reactions 7664-39-3, reactions
RL: RCT (Reactant)
 (in stopped-flow **etching** of MNOS structures, in depth profiling)
IT 7631-86-9, properties
RL: PRP (Properties)
 (interface of, in MNOS structures)

=> d his

(FILE 'HOME' ENTERED AT 22:18:32 ON 28 JUN 2002)

FILE 'REGISTRY' ENTERED AT 22:18:43 ON 28 JUN 2002
 E PHOSPHORIC ACID/CN

L1 1 S E3
 E SULFURIC
 E SULFURIC ACID/CN

| | |
|-----|----------------------------|
| L2 | 1 S E3 |
| L3 | 0 E-BORIC ACID/CN |
| | E BORIC ACID |
| | E BORIC ACID/CN |
| L4 | 2 S E3 |
| | E CARBONIC ACID/CN |
| L5 | 1 S E3 |
| | E PERCHLORIC ACID/CN |
| L6 | 1 S E3 |
| | E SULFURIC ACID/CN |
| L7 | 1 S E3 |
| | E ETHYLENE GLYCOL/CN |
| L8 | 1 S E3 |
| | E PROPYLENE GLYCOL/CN |
| L9 | 1 S E3 |
| | E BUTYLENE GLYCOL/CN |
| L10 | 3 S E3 |
| | E DIPROPYLENE GLYCOL/CN |
| L11 | 1 S E3 |
| | E SORBITOL/CN |
| L12 | 1 S E3 |
| | E HEXYLENE GLYCOL |
| | E HEXYLENE GLYCOL/CN |
| L13 | 1 S E3 |
| | E 1,3-DIBUTYLENE GLYCOL/CN |
| | E 1,2,6-HEXANETRIOL/CN |
| L14 | 1 S E3 |
| | E 1,5-PENTANEDIOL/CN |
| L15 | 1 S E3 |
| | E ETHANOL/CN |
| L16 | 1 S E3 |
| | E PROPANOL/CN |
| L17 | 2 S E3 |
| | E ISOPROPANOL/CN |
| L18 | 1 S E3 |
| | E ISOBUTANOL/CN |
| L19 | 1 S E3 |
| | E BUTANOL/CN |
| L20 | 2 S E3 |

FILE 'CAPLUS' ENTERED AT 22:43:23 ON 28 JUN 2002

| | |
|-----|---|
| L21 | 0 S ETCH? AND L1 AND L2 AND L3 AND L4 AND L5 AND L6 AND L7 |
| L22 | 289966 S ETCH? OR L1 OR L2 OR L3 OR L4 OR L5 OR L6 OR L7 |
| L23 | 5622 S ETCH? AND (L1 OR L2 OR L3 OR L4 OR L5 OR L6 OR L7) |
| L24 | 82 S L23 AND (L8 OR L9 OR L10 OR L11 OR L12 OR L13 OR L14 OR L15) |
| L25 | 160 S L23 AND (L16 OR L17 OR L18 OR L19 OR L20) |
| L26 | 18 S L24 AND (SEMICONDUCTOR) |
| L27 | 38 S L25 AND SEMICONDUCTOR |

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ALL L# QUERIES AND ANSWER SETS ARE DELETED AT LOGOFF

LOGOFF? (Y)/N/HOLD:y

| COST IN U.S. DOLLARS | SINCE FILE ENTRY | TOTAL SESSION |
|----------------------|------------------|---------------|
| FULL ESTIMATED COST | 160.91 | 286.72 |

| DISCOUNT AMOUNTS (FOR QUALIFYING ACCOUNTS) | SINCE FILE ENTRY | TOTAL SESSION |
|--|------------------|---------------|
| CA SUBSCRIBER PRICE | -34.69 | -34.69 |

STN INTERNATIONAL LOGOFF AT 22:56:30 ON 28 JUN 2002

| | Type | L # | Hits | Search Text | DBs |
|----|------|-----|--------|--|-------|
| 1 | BRS | L1 | 29790 | HF or HNO3 or H3PO4 or H2SO4 or H3BO3 or HC1O4 or H2SO3 | USPAT |
| 2 | BRS | L2 | 203529 | ethanol or propanol or methanol or n-butanol or isopropanol or isobutanol | USPAT |
| 3 | BRS | L3 | 251482 | ethanol or propanol or methanol or n-butanol or isopropanol or isobutanol | USPAT |
| 4 | BRS | L4 | 89861 | etching | USPAT |
| 5 | BRS | L5 | 238613 | (polycrystalline adj silicon) or (amorphous adj silicon) or (silicon or germanium or gallium arsenide) | USPAT |
| 6 | BRS | L6 | 30320 | 4 same 5 | USPAT |
| 7 | BRS | L7 | 60185 | doped | USPAT |
| 8 | BRS | L8 | 6392 | 6 same 7 | USPAT |
| 9 | BRS | L10 | 8 | 8 same (1 and 3) | USPAT |
| 10 | BRS | L12 | 28 | (8 same 1) and 3 | USPAT |

| | Time Stamp | Comments | Error Definition | Errors |
|----|---------------------|----------|------------------|--------|
| 1 | 2000/04/24
15:30 | | | 0 |
| 2 | 2000/04/24
15:32 | | | 0 |
| 3 | 2000/04/24
15:37 | | | 0 |
| 4 | 2000/04/24
15:37 | | | 0 |
| 5 | 2000/04/24
15:41 | | | 0 |
| 6 | 2000/04/24
15:44 | | | 0 |
| 7 | 2000/04/24
15:55 | | | 0 |
| 8 | 2000/04/24
15:56 | | | 0 |
| 9 | 2000/04/24
16:22 | | | 0 |
| 10 | 2000/04/24
16:43 | | | 0 |